CW 4810GUIVYMUIVYMA FCWBD C
MI 48106UIVYMUIVYMA FCWBD
UNIVERSITY MICROFILMS INTL
SERIAL PUBLICATIONS
300 N ZEEB RD
ANN ARBOR MI 48106

Award of $2.3 Million to NCR User Upheld

By Bill Laberis
CW Staff

SAN FRANCISCO — In a decision that could send deep tremors throughout the computer industry, the Ninth U.S. Circuit Court of Appeals here voted 3-0 to uphold a lower court's $2.3 million fraud judgment against NCR Corp.

The Dayton, Ohio, computer manufacturer must now decide whether to attempt to carry its appeal to the U.S. Supreme Court or admit defeat and pay the record damage award plus interest to the Glovatorium, Inc., a dry cleaner in Oakland, Calif. If NCR chooses to end the litigation, the damages paid would represent the largest ever fraud verdict returned against a computer manufacturer.

Moreover, the case could set a precedent for future user lawsuits over contracts that contain explicit language or damage disclaimers exempting the vendor from being sued for consequential damages. Such language was contained in NCR's contract with Glovatorium, but the language was brushed aside by the U.S. District Court jury and the appellate court in rendering a verdict once fraud and misrepresentation were established.

An NCR spokesman expressed the company's disappointment with the appeals court decision, handed down late last month, saying that NCR feels "the verdict is unjustified."

He added that NCR is considering asking the U.S. Supreme Court to hear the case, noting the company has until Nov. 20 to do so. Such a high court appeal would attempt to reduce the $2 million punitive damages award, the spokesman said.

Glovatorium's attorney, however, doesn't believe the Supreme Court will hear the case if asked to do so and said it is therefore a matter of time before NCR signs a check to close the suit.

"There is no unique area of law covered by this case; they [NCR] were charged

(Continued on Page 7)

NEWSPAPER

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper . Second-class postage paid at Framingham, Mass. and additional mailing offices © 1982 by CW Communications/Inc

$1.50 a copy; $44/year | September 20, 1982 | Vol. XVI, No. 38

IBM Net Now Links User's Remote Sites

TAMPA, Fla. — The IBM Information Network has enhanced its service bureau format by enabling customers to use the nationwide network to link remote terminals and computers within their organizations.

In order to utilize the new Network Services feature, customers' terminals and computers are linked to the Information Network via leased lines. With on-line menus, the user enters requests for applications and the network links the user's terminal to the appropriate customer processor.

For example, a customer in Dallas could check inventory status maintained on a computer in New York or do financial forecasting or sales analysis using applications running on a computer in San Francisco, a spokesman explained.

Network Services users can also select an optional attachment feature that extends the Information Network to their locations. With this option, the network manages communications lines and equipment and serves as the single vendor contact for network users.

The Network Services product will initially be made available to selected customers in mid-1983.

IBM also announced that the Information Network will offer direct access to the network and begin marketing in Houston, Los Angeles and Philadelphia on Oct. 1. The 24-hours-a-day, seven-days-a-week network is currently available in New York, Washington, D.C., Atlanta, Chicago, Dallas, San Francisco and Tampa, Fla.

IBM Package Lets Micro Emulate 3270

By Bruce Hoard
CW Staff

BOCA RATON, Fla. — IBM has unveiled software for its Personal Computer that allows it to communicate with a host computer supporting IBM's Systems Network Architecture (SNA) and emulate the IBM 3270 and 3101 terminals.

A similar package, called Emulink, was announced earlier the same week by Datasource Systems Corp. of Minneapolis (story on Page 43).

IBM's newly introduced SNA 3270 emulation and remote job entry (RJE) support package permit the Personal Computer to

(Continued on Page 6)

High-Level IBMers Accused of Trying To Sell Micro Secrets

By Tom Henkel
CW Staff

ARMONK, N.Y. — IBM has discharged and filed suit against three high-ranking employees for allegedly misappropriating secret information about the IBM Personal Computer. The civil suit was also filed against Bridge Technology, Inc., which IBM claimed was founded by the three employees and "attempted to sell design information relating to unannounced IBM products in the personal computer field."

Named as defendants in a suit filed Sept. 13 in the Westchester County State Supreme Court were Louis C. Eggebrecht of Rochester, Minn., a senior engineer in IBM's Systems Products Division; Peter J. Stearns of White Plains, N.Y., a senior engineer at IBM's Communications Products Division; and William W. Erdman of Stamford, Conn., a product line manager in IBM's World Trade Americas/Far East Corp.

According to incorporation papers, Bridge Technology, Inc. was incorporated July 2 in White Plains, N.Y., to sell software, peripherals, processor enhancements and consulting services to an unspecified base of computer users. However, Bridge Technology is not listed in the Westchester County telephone directory and a company address was not available.

None of the defendants would comment on the IBM charges, and Joseph A. Maria of Maria & Libertella, who handled Bridge Technology's incorporation, failed to return any telephone calls by press time.

IBM was granted a temporary restraining order restricting Bridge Technology and the three defendants from revealing confidential IBM information. That temporary restraining order expires today. A hearing today will determine whether that restraining order will be continued, IBM said.

In its suit, IBM has charged that Eggebrecht, Stearns and

(Continued on Page 4)

Software/Expo Opens This Week in Chicago

•ADR to Unveil Extended T/S And DSS Options for 'Roscoe'

By Lois Paul
CW Staff

CHICAGO — Applied Data Research, Inc. this week will unveil an Extended Time Sharing Option (Etso) for its Roscoe on-line programming software, which runs in IBM OS environments, and will announce the availability of its Empire decision support system under Roscoe for MVS environments.

The introductions are being made concurrently at the Software/Expo show here in Chicago and at ADR's Cadre users group meeting, being held in Dallas.

Etso was designed to help application developers using Cobol, PL/1, Fortran and other higher level languages ex-

(Continued on Page 5)

•Applications Set for Debut

CHICAGO — Software/Expo here this week will serve as Computeristics, Inc.'s launching pad for two applications packages for IBM and plug-compatible OS and DOS systems.

The offerings are Custom Accounts Receivable (Customar) 5.0 and Customorder 2.0. (Although both carry

(Continued on Page 6)

•'EPS 2.0' Going Public

CHICAGO — An enhanced version of EPS, Inc.'s FCS-EPS decision support system that includes a full screen editor is being shown for the first time here in conjunction with the Software/Expo show and conference.

FCS-EPS is available for users of IBM and plug-compatible systems running in TSO

(Continued on Page 6)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
TM reg. U.S. Pat. Off.

Editor John C. Whitmarsh
Managing Editor Rita Shoor
News Editor Cheryl M. Gelb
Senior Editors:
Features Catherine Marenghi
Software Lois Paul
Communications Phil Hirsch
Bruce Hoard
Systems Timothy J. Scannell
Office Automation Bruce Hoard
Industry Marcia Blumenthal
Writer/Analysts: Marguerite Zientara
Tom Henkel
Senior Writer: Bill Laberis
Staff Writers: Jim Bartimo
Susan Blakeney
Paul Gillin
Correspondents:
New York Bob Johnson
Washington, D.C. Jake Kirchner
West Coast Robert Batt
Jeffry Beeler
Chief Copy Editor Donovan White
Copy Editors: Dave Bouffard
George Cohen
Kathie Gow
Patti Hartigan
Patricia Keefe
Rick LePage
Betsy Morse
Deborah Scaduto
Barbara T. VanScoyoc
Editorial Assistants: Nancy Pinks
June Fettig
Contributors:
Education J. Daniel Couger
Taylor Reports Alan Taylor
Human Connection Jack Stone

SPECIAL PUBLICATIONS
Computerworld Extra!
Editor Jack B. Rochester
Computerworld OA
Editor Ann Dooley
Copy Editor Nancy Fleming

Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES:

New York City: Suite 7G, 401 East 80th St., New York, N.Y. 10021. Telephone: (212) 570-2135

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064

Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Richard Hease, ECC Publications, 30-31 Islington Green, London N1. Phone (01) 359-7481

W. Germany: Eckhard Utpadel, CW Publikationen, Friedrichshofstrasse 31, 8000 Munich 40. Phone (089) 34-90-61. Telex 5215350

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone 720.85.66

Asia: Mr. Shohei Kurata, Computerworld Japan, 1-19-7 Shintomi, Chuo-ku, Tokyo 104. Phone (03) 551-3882. Telex 252-4217

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone (02) 4395133. Telex SECCO AA25468

Brazil: Eric Hippeau, Data News, Computerworld do Brasil Servicos e Publicacoes Ltda., Rua Alcindo Guanabara 25, 10th Floor 20031 Rio de Janeiro, RJ Brasil. Phone (021) 240-8225. Telex 2130838 (WORD BR)

Mexico: Richard Small, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone (905) 514-4218, (905) 514-6309

Spain: Neil Kelley, Computerworld Espana, Barquillo, 38, Madrid-4

Denmark: Holle Lund Christensen, Computerworld/Danmark, Camnel Strand 30, 1202 Copenhagen K. Phone (01) 1234-11

Second-class postage paid at Framingham, Mass. and additional mailing offices PN127420. *Computerworld* (ISSN 0010-4841) is published weekly, except March (7 issues), June (5 issues), September (6 issues), October (5 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Copyright 1982 by CW Communications/Inc. All rights reserved.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Communications for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, MA 01970.

Permission to photocopy does not extend to contributed articles followed by this symbol.

Special requests should be addressed to Nancy M. Shannon, CW Communications/Inc., Box 880, 375 Cochituate Rd., Framingham, MA 01701. ISSN 0010-4841/82 $3.00 + $.50

$1.50 a copy; U.S. — $44 a year; Canada, Central & So. America — $110 a year; Europe — $165 a year; all other countries — $245 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

Computerworld can be purchased on 35 mm microform through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone (313) 761-4700. *Computerworld* is indexed; write to Circulation Dept. for subscription information.

ABP MCC

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Dept., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Plug-Compatible Disks

Amdahl Offers 3350 Competition

By Tim Scannell
CW Staff

SUNNYVALE, Calif. — Amdahl Corp. has launched its attack on the plug-compatible disk storage market by introducing a series of systems that offer IBM Model 3350 disk file formats and vertically mounted disk assemblies that it said cut down on the amount of floor space needed by up to 33% per disk unit.

The disks are also said to offer better performance than IBM's 3350 units and performance that is comparable to or better than IBM's advanced 3380 disk drives.

The Amdahl 6000 series storage system, which at present consists of the Model 6880 Storage Control Unit and Model 6280 Disk Storage Unit, stores data using multiple, high-speed head disk assemblies (HDA). Unlike the disk/head assemblies in conventional drives, which are mounted horizontally, the 6000 series HDAs are vertically mounted. This architecture not only reduces the amount of physical space required for each disk unit, but minimizes the heat generation and eliminates the need for forced-air cooling, Amdahl said.

Amdahl's Model 6280 disk system is said to be the same physical size as the IBM 3380, one-third the size of the IBM 3350 and about two-thirds as large as the IBM dual-density 3350 disk system. It provides up to 5G bytes of data storage in about 23.5 sq ft of floor space, a spokesman noted.

Standard features of the Model 6280 disk system are the use of multiple 10½-in. disk platters that allow each disk unit to store up to 1.27M bytes of data in four disk enclosures, a direct drive motor, two independent storage directors and four-channel switching.

Up to 4.56M bytes of fixed-head storage is available as a system option, according to the spokesman.

Dynamic Pathing

The 6000 series disk units offer Dynamic Performance Pathing, a technique that allows two independent paths to each HDA as well as a built-in fault tolerance for reliability, the spokesman explained.

The Model 6280 drives are available in four different versions — the AA4, AAF, B4 and B4F — allowing users the choice of the optional fixed-head storage and a 1.52M or 1.86M byte/sec transfer rate. All have an 18 msec average seek time and a 7.6 msec average latency time, according to the vendor.

The drives operate under the IBM MVS, VM, VS1, SVS and ACP operating systems and do not require any software conversion from IBM 3350-type file arrangements, the Amdahl spokesman said.

The price for a typically configured system including one 6880 Storage Control Unit (Model A2) and four 6280 Disk Storage Units is $292,000. Leasing programs are also available, the Amdahl spokesman noted from 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

Amdahl Adds Software To Boost CMS Performance

NEW YORK — Amdahl Corp. last week unveiled a software product designed to enhance the performance of processors running in IBM conversation management system (CMS) environments. Called CMS/XL, the software was introduced during the company's VM Information Exchange Workshop here.

XL — an abbreviation of "accelerate," according to an Amdahl spokesman — reportedly reduces the I/O requirements of running CMS, as well as the load time and amount of CPU time needed. The benchmark figures on XL indicate a 32.5% reduction in response time, while actual test sites showed time savings of 10% to 15%, according to the vendor.

The product operates on Amdahl 470 and compatible machines under IBM's VM/CMS operating system and requires no change in source code or system software for implementation, Amdahl said. It is set for general release at the end of this month and is tentatively priced at $725/mo or $7,500/year.

Additional information can be obtained from Amdahl headquarters at 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

This Week

IN DEPTH

The Virtual Meeting .... Follows Page 48
Balanced Computing ID/25
Who Owns Innovation? ID/33

NEWS

IBM Accuses Trio of Misappropriating Secrets 4
American Bell Changes Net's Name 5
Fear of Competition Said Behind 3270 Emulation 8
Getting a DP Job: Choosing the Road 8
Many DP Jobs Open, But It's a Buyer's Market 9
Consultant: IRC as DP User First-Aid Station 11
Anderson Predicts IBM to Dominate Desktop Mart 12
IBM WP Package for Office Micros Worst: Exec 13
Silent Areas of OA Conversations Addressed 14
Introducing OA Called Expensive, Frustrating 15
Post Office Said Proposing Ecom Rate Hike 18
Managers on the Move 18
Merlyn to Launch Symposia Series 20
Mass. T/S Exposes $129 Million Welfare Fraud 21
Calendar 22

EDITORIAL

Editorial: A Pool of Potential Labor 24
Getting Ahead in DP: Drugs on the Job 25
Human Connection: Terminal Operators 25

SOFTWARE & SERVICES

Internal Security Necessary for DOS/VSE 29
CSI Aid Lets 'Task Master' Run Under CICS/VS 32
'Omnibase' Price Unbundled for Components 36
'Xmenu' Targets New Users of 3270 Terminals 37
Version 2 of 'Cognac' Fits Prime 38
Unix III Alternative Aimed at Designers 39
VS Cobol Inventory Tool Targets Wang VS Family 40

COMMUNICATIONS

Dems Carriers Poised to Begin Operation 43
SDLC Available on Satellite Net 47

SYSTEMS & PERIPHERALS

CEC Offers Micro System for NCR Mainframes 49

MINIWORLD

TI Introduces Multiuser Desktop Series 51
Low-Speed Printers Introduced by Racal-Milgo 52

OFFICE AUTOMATION

OA Not Just WP Anymore 53
OA, Micro Courses Offered to Fortune 500 Firms 54

COMPUTER INDUSTRY

CDC Has Hopes for ISI Despite Ansi Resistance 55
Regional Report: Texas 55
DP Firms Insist They Abide by Export Restrictions 56
NCR Announces Four-Chip Set 60
Gelsco Agrees to Buy IBM Micros 62
Texas Looking to Beef Up High-Tech Education 67

ADVERTISING INDEX 96

"SHOCKING!"

The Facts of Life About Maintenance and Documentation.

(And how SYDOC can change 'em!)

Call (201) 568-9700.

In keeping with our tradition of printing "all the DP news that fits," we present *Six Unexpurgated Facts About COBOL Maintenance and Documentation:*

1. Very few programmers—male of female—have ever established a meaningful relationship with documentation. What they produce is seldom very good—and it's almost never updated.

2. The result is a generation what might be called "Orphan COBOL-Programs." They may have fathers. And they may have mothers. But birth certificates they have not got!

3. The rub comes when you try to update these orphans to meet the demands of the brave new world of DP. You can try to deduce the logic of such orphans by referring to the source code. But that's a slow and dangerous business. And your name had better be Sherlock Holmes.

4. Or you can simply ask the author of the program about the underlying logic. But guess what? He or she has just left for an exciting new job in Tahiti.

5. What you're probably left with is hand-drawn hierarchical charts—a long bus ride from structured programming techniques. And if you try to insert new code without understanding the logic, watch out. You'll probably introduce so many bugs you'll never be free of the exterminator!

6. The cost to society is high. It's been estimated that as much as 80% of your entire DP budget may be going into modifying complex COBOL programs!

WITH SYDOC YOU CAN SAY GOODBYE TO ALL THAT: SYDOC is not a sort but a new and exciting Structured Documentation System. It takes the responsibility for documentation out of the hands of programmers and puts it on the broad shoulders of the computer. SYDOC works three ways:

1. SYDOC IS GREAT FOR MAKING MODIFICATIONS: It works like an X-Ray. It analyzes existing programs and prints out charts that tell you everything you need to know about the program's logic, hierarchical structure, variables, and relationships between statements. You can quickly and safely pinpoint code to be changed. And you're far less likely to introduce bugs because you *know* the logic.

2. SYDOC IS GREAT FOR DOCUMENTING NEW BORNS: It tracks new programs and automatically produces first-rate structured documentation. You have an accurate and concise record of every program your staff develops. A record that can never be lured away by an executive recruiter.

3. SYDOC IS GREAT FOR MANAGERS: It permits you to establish uniform, structured-documentation standards and stick to them. You don't have to nag programmers about documentation. The ball is in the computer's court.

So if you'd like to reduce the size of your COBOL maintenance budget, give us a call. Dr. SYDOC will be glad to put you on his famous "Waste Watcher" diet!.

SYDOC
STRUCTURED
DOCUMENTATION
SYSTEM

syncsort INC.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

IBM Accuses Trio of Misappropriating Secrets

(Continued from Page 1)

Erdman tried to sell confidential documents on "about 40 products related to the Personal Computer" to Tecmar, Inc., a Cleveland, Ohio, firm that sells peripherals for the Personal Computer. Tecmar President Dr. Martin Alpert said in a sworn affidavit that he notified IBM on Aug. 12 that Erdman had contacted Tecmar's vice-president of marketing, David Wertman.

According to Alpert, Erdman told Wertman that he was an IBM employee but was thinking of leaving IBM and would like to do business with Tecmar (as well as other firms) to market products for the IBM Personal Computer — products like a device to improve terminal capabilities of the Personal Computer. Erdman said his associates, also IBM employees, were knowledgeable about IBM's future products and business plans, the affidavit said.

Wertman said Erdman offered to sell Tecmar a prototype of an unspecified product for a fee of at least $100,000 plus another $100,000 in advance for future sales royalties.

Alpert said he and Wertman discussed the products allegedly proposed by Erdman and determined they were potentially profitable ventures. However, Alpert said he was concerned the product ideas were developed using confidential IBM information, so Tecmar canceled further scheduled meetings with Erdman and contacted IBM.

At IBM's suggestion, Alpert said he reopened negotiations with Erdman Aug. 16, by calling him at his Stamford, Conn., home. During that conversation, the Alpert affidavit continued, Erdman outlined his product ideas, complete with estimated manufacturing costs and ideas for follow-on products.

In addition, according to Alpert, Erdman listed the qualifications of his associates, one of whom he described as a hardware expert who designed the Personal Computer, Datamaster and IBM's System/23 Datamaster. Erdman also said he was associated with a software expert who had 10 years of experience in software development at IBM and who was currently working on Personal Computer software and some of the other products proposed to Tecmar.

Alpert said he had at least three other conversations with Erdman prior to Sept. 4, but Tecmar never actually signed an agreement with Bridge Technology.

Lawsuit Asks For Repayment Of Salaries

ARMONK, N.Y. — IBM's civil suit filed against Louis C. Eggebrecht, Peter J. Stearns and William W. Erdman charges that the three used their positions as high-ranking IBM employees to gather "highly valuable, confidential information concerning current and future products, features and business plans which belong to IBM."

IBM contends that the confidentiality of secret projects is spelled out in various employee nondisclosure agreements and other documents, including "IBM Business Conduct Guidelines," an outline of IBM employee confidentiality expectations that employees must sign as a condition of employment.

In its suit, IBM has asked that:

- Eggebrecht, Erdman and Stearns repay salaries received from IBM during the time they allegedly engaged in unfair competition with IBM.
- An injunction be issued forcing the three defendants to return any misappropriated IBM documents.
- Injunctions against further disclosure of IBM trade secrets be issued.

IBM Documents Say Accused Employees Familiar With Key Marketing Strategies

ARMONK, N.Y. — According to court documents submitted by IBM, the three former IBM employees accused of misappropriating IBM trade secrets had knowledge of key development and marketing strategies for the IBM Personal Computer.

One of the defendants, Lewis C. Eggebrecht, was a senior engineer for general terminal and system development for IBM's System Products Division. In its suit against the three former employees, IBM described Eggebrecht, employed by the company since 1968, as the "chief architect and lead system designer for the Personal Computer."

From February 1978 to April 1981, IBM said, Eggebrecht was a senior engineer involved in developing the System/23 Datamaster and Personal Computer. Eggrebrecht also functioned as a consultant to top IBM managers on a variety of technical issues; In that capacity, the vendor maintained, Eggebrecht was involved in determining IBM's product technology business strategy for the next five to seven years.

Since April 1981, IBM said, Eggebrecht provided senior system design consulting assistance for future enhancements to the Personal Computer, and during 1982 he had served as a senior product consultant on future IBM office systems, CRT terminal and Personal Computer plans.

Senior Engineer

Peter J. Stearns was senior engineer and manager of architecture and technology at IBM's Communications Products Division in Yorktown Heights, N.Y. Before holding that position, he managed an office systems development team at IBM's Thomas J. Watson Research Center, also in Yorktown Heights. That group was working on an office system based around IBM's Displaywriter word processing system, according to IBM.

Stearn's group "was the focal point for exploratory development within IBM directed at potential future uses of the Personal Computer product. In addition, Stearns' group was closely associated — on a continuous basis — with programming and engineering groups responsible for the development for future IBM Personal Computer products," according to the complaint filed by IBM.

Occasional proposals emanating from Stearns' group were used as the basis of proposed follow-on Personal Computer products, IBM said.

Stearns had been employed by IBM since 1975.

William W. Erdman was product line manager for office systems at IBM's World Trade Americas/Far East Corp. In that position, IBM contends, Erdman had access to confidential business plans concerning the Personal Computer and related products, including marketing goals and projected financial performance information on the Personal Computer and related products, according to the suit filed by IBM. Erdman was employed by IBM since 1964, the vendor said.

Repeated attempts to contact the three men were unsuccessful as of press time. Erdman and Eggebrecht family members said the men would not comment on IBM's charges against them and Bridge Technology, Inc. Stearns was not available for comment.

TP DATA
STREAM COMPRESSION
CTOP®-CICS Transmission Optimizer
- Instantly improves CRT and printer response
- Extends capacity of entire network
- Reduces line busy and front-end loads
- Gives new life to slower circuits
- DOS, VSE, VSI, MVS, BTAM, TCAM, VTAM
- No modifications to anything

Site license under $3,000

H & W Computer Systems, Inc.
P.O. Box 4173
Boise, Idaho 83704 • (208) 377-0336

Some Cray Supercomputers To Cost $2 Million Less

MINNEAPOLIS — Though they are generally regarded as the world's most expensive computers, Cray Research, Inc.'s line of large-scale scientific processors will be cheaper in 1983.

Cray announced last week that its systems, used mainly for scientific research and defense applications, will cost up to $2 million less next year. Its systems now range in price from about $6 million to around $17 million, a spokesman said.

Cray will shave up to $2 million off the price of its top-of-the-line X-MP processor. The X series processors now carry $9 million to $11 million price tags.

Entry-level S series processors will cost between $4.6 million and $10.8 million.

Cray did not cut the price of its recently announced M series processors. They will continue to cost between $4 million and $7 million, the spokesman said.

Cray cited two reasons for the price cuts. First, starting in 1983 the vendor will use less expensive metallic oxide semiconductor memory chips instead of the current bipolar devices. Second, Cray is trying to bring the prices for X and S series processors in line with prices for M series machines, the spokesman said.

Cray hopes the move will prompt some users to convert from a lease to a purchase agreement on Cray processors, he added.

Mission to Japan Set

SUDBURY, Mass. — An eight-day study mission to Japan to visit key computer graphics manufacturers and tour their facilities will be conducted by *The S. Klein Newsletter On Computer Graphics*, a semi-monthly periodical published here. The trip, is scheduled for Feb. 19-27.

Costs and further information on the upcoming event are available from the Japanese Study Mission, *The S. Klein Newsletter On Computer Graphics*, Suite 27, 730 Boston Post Road, Sudbury, Mass. 01776.

ADR Adding to 'Roscoe' Extended T/S, DSS Options

(Continued from Page 1)

ecute their applications in an interactive environment. Using Etso, the programmers dynamically allocate application files and associate them with external data sets, Roscoe's Active Work Space, Roscoe library members and the terminal, the vendor explained. Application programs are monitored by Etso to ensure that they do not interfere with other Roscoe users.

The Etso option reportedly manages the time-sharing environment by monitoring applications' CPU consumption. Dispatching priorities are adjusted according to usage. Etso is said to control total CPU usage through limits preset by site management.

Another feature of Etso is memory acquisition protection, the vendor noted, explaining that site management can set the total amount of storage acquired by an application and the amount of storage for any one request. Application programs reportedly can communicate with Roscoe terminals by using IBM TSO's Tput and Tget macros as well as IBM's Beam and Qsam methods.

Etso is said to operate on MVS systems and to require no modifications to the operating system or to application programs. The Roscoe/Etso option will be available in the first quarter of 1983 for a permanent license price of $14,000. The permanent license price for Roscoe is $43,000 for MVS sites and $37,000 for non-MVS sites on IBM 370, 30 series, 4300 and plug-compatible processors.

ADR's second announcement this week concerns the availability of its Empire financial decision support software for IBM and plug-compatible systems under Roscoe in MVS environments.

Empire currently runs under Roscoe using ADR's Virtual Processing Environment, an internally developed product component designed to allow applications to run transparent to the host environment. The vendor said Empire provides users with integrated on-line capabilities for performing statistical analyses, forecasting, graphics and "what-if" analyses.

The initial release of Empire under Roscoe is said to support access to OS sequential and partitioned data sets.

Support for Empire to access Roscoe library members directly will be available in the first quarter of 1983, according to ADR. The permanent license price for Empire starts at $48,000. The software also is available under IBM's MVS with TSO and VM/CMS environments, as well as under Digital Equipment Corp. Decsystem-10, Decsystem-20 and VAX-11 computers.

ADR is headquartered at Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

American Bell Changes Net's Name

PARSIPPANY, N.J. — American Bell, Inc. has changed the name of its Advanced Information Service/Net 1 to Advanced Information Service/Net 1000. The change was impelled by pressure from Ungermann-Bass, Inc., which has a local-area network named Net One.

When American Bell took the wraps off what had previously been known as the Advanced Communications Service (ACS) in July, it christened the intelligent packet-switching network the Advanced Information Service/Net 1 Service. It was generally referred to as AIS/Net 1.

Ungermann-Bass was incensed by the infringement on its name and left no doubt it would take whatever legal steps necessary to protect it.

Ralph Ungermann, president of Ungermann-Bass, said of the name duplication, "I have no idea how it happened, but it did. We notified them [American Bell] and they were extremely professional and efficient in coming to a quick resolution of the problem."

In a press release issued last week, American Bell announced the transformation of Net 1 to Net 1000. In part, the release read: "American Bell, a recently formed subsidiary of [AT&T], announced that hereafter its service offering will be named Advanced Information Systems Net 1000 Service."

RTUA Winter Meet Slated for Jan. 16-19

MANCHESTER CENTER, Vt. — The Recognition Technologies Users Association (RTUA, formerly Optical Character Recognition [OCR] Users Association) will hold its Winter Conference in San Antonio, Texas, January 16 to 19.

Speakers will discuss applications of image, OCR, magnetic stripe, voice, mark-reading, magnetic ink and audio technologies for data entry from such diverse backgrounds as manufacturing, banking, petroleum, government and education.

Speakers will include chief executive officers from Datapoint Corp. and Bacntec, Inc.

The registration fee is $280 for members and $350 for nonmembers.RTUA can be reached through P.O. Box 2016, Manchester Center, Vt. 05255.

Just because Computer Associates is the world's dominant DOS software company, maybe you thought we weren't much of a factor in OS software. The fact is, our very first product was developed for the OS system, and we've been developing OS software for over ten years.

Now we're even stronger. Computer Associates has just joined forces with CAPEX CORPORATION, one of the largest OS software suppliers around. This gives us awesome service capabilities and a product line of OS packages that's positively gigantic.

Best of all, our software products are integrated —they can talk to each other. The benefit to you is far greater productivity than from any programs acting alone.

The integrated approach to diverse software has made Computer Associates the pre-eminent systems software company in the world. We have over 11,000 satisfied customers, over 18,000 products installed, and over 40 DOS/OS products combined.

But just because we've gotten big, doesn't mean we're too big for our britches. We're ready and anxious to service even the smallest data processing department to help increase its productivity.

That's why, when it comes to systems software, nobody can beat the giant:
Computer Associates International, Inc.
125 Jericho Turnpike, Jericho, N.Y. 11753.

COMPUTER ASSOCIATES

Analyst Thinks Fear of Competition Reason Behind 3270 Emulation

By Bruce Hoard
CW Staff

NORWALK, Conn. — A healthy fear of competition is the primary reason IBM introduced communications software that allows its Personal Computer to emulate its 3270 CRT terminal (story on Page 1), according to Kenneth Bosomworth, president of International Resource Development, Inc. here.

Bosomworth noted that Datasource Systems Corp. of Minneapolis had beat IBM to the Personal Computer-3270 emulation punch with its announcement of Emulink (story on Page 43). According to Bosomworth, two other companies have IBM Personal Computer-compatible devices "in the pipeline" that will offer 3270 emulation.

One of those companies is Canadian and has announced, but not yet shipped, its device. The other, a U.S. firm, has not yet announced its product, he said.

"If you think about it from IBM's viewpoint," Bosomworth said, "they really didn't want to introduce 3270 emulation any sooner than they had to." The reason for that, he contended, is that IBM makes a lot more money from 3270 sales than it does from Personal Computer sales.

The IBM announcement fits into its national account strategy of making IBM's unit the microcomputer with which management information systems (MIS) and DP directors feel comfortable and will want to distribute throughout their organizations, he said. If another personal computer company came out with a Personal Computer-3270 emulation package before IBM, that company could win the hearts and money of the DP/MIS directors.

"The movement of personal computers into the 3270 market had reached the point where IBM was either going to start taking a beating on its 3270s or else IBM had to jump in and lead the parade," he declared.

Asked if 3270 emulation for the Personal Computer is tantamount to a death knell for the 3270 itself, Bosomworth replied that IBM has pricing options that would enable the 3270 to remain a salable item. At the moment, however, the typical MIS director would select the Personal Computer over the 3270, he said.

Despite the Datasource Systems introduction, Bosomworth does not expect a flood of non-IBM Personal Computer-3270 emulation packages. The reason? "If I were in the microcomputer software business, I would not attempt to compete with IBM software," he explained, adding he would rather pay $700 for IBM's best 3270 package than receive it gratis from an unknown vendor.

The 3270 is not the only CRT terminal in trouble, Bosomworth said. According to him, during the past six to nine months both the CRT terminal and word processor markets have been lagging while the personal computer market has boomed.

He went on to say top CRT terminal and word processor management is asking itself if the onrush of personal computers and their ability to emulate other devices is going to doom the terminal and word processor industries. "We say an unequivocal 'yes,'" he said.

"The onrush of personal computers is in the process of swamping and drowning out both the terminal industry and the word processor industry," he predicted. The word processor industry will be "pretty much" drowned out within two years, but CRT terminals, because of their specialty applications, will last longer.

IBM Offers 3270 Emulation

(Continued from Page 1)

act as a terminal that can communicate with a host system in one or two modes, supporting either SNA 3270 or SNA 3770 RJE. It will be available next January from IBM product centers for $700.

The 3101 emulation package provides emulation of the IBM 3101 Model 20 CRT terminal, with some differences, according to user-selected options in specification files. The 3101 features it lacks include transparent mode, half-duplex modem support and reverse channel and controlled request to send.

The transmission of Ascii format files to and from host computer and local diskette storage is supported, IBM said.

The package also allows conversion of Ascii format diskette files to and from binary format. Several application files are offered as examples of popular 3101 configurations.

The 3101 emulation package will be available next January from IBM product centers for $140.

Asynchronous Support

Also introduced was Version 2.0 of Asynchronous Communications Support, said to allow Personal Computers, with no additional programming, to work as industry-standard asynchronous Teletype Corp. Model 33 and 35 ASR terminals.

In addition to supporting the Personal Computer as an interactive terminal, Version 2.0 allows the exchange of program and data files with its host system and gives the user flexibility in specifying teletypewriter protocol allowing attachment to a variety of host computers. It also permits two Personal Computers to communicate with each other for transfer of program and data files, the company said.

Version 2.0 will be available next month from IBM product centers for $60.

IBM also unveiled a Synchronous Data Link Control (SDLC) communications adapter that provides the ability to attach the Personal Computer — through an external modem — to either a switched or leased line network using SDLC protocols.

The adapter is installed as an option in one of five available system expansion slots. It will be available next January for $300 from IBM product centers. A cable for the adapter will also be available in January and costs $75.

The company introduced a National Sales Support Program, under which customers who purchase the Personal Computer in volume within an organization may now include in the qualifying order quantity individual systems purchased by employees, faculty members or students.

Systems will be delivered to individuals by authorized IBM Personal Computer dealers, who will perform post-sale service and support. Systems used by organizations will continue to be delivered and supported by IBM's marketing organizations.

Computeristics to Launch Two Packages

(Continued from Page 1)

version numbers, they are new products.)

Computeristics described Customar 5.0 as a real-time accounts receivable package designed with data base management capabilities. Complex information reportedly can be organized in file structures. The package consists of a group of highly structured modules, the vendor added.

The software is said to provide assistance for credit approval and collection, cash application and adjustments and accounting and control of receivable assets.

Customar will go into beta testing in October. It is scheduled for availability in late fall 1982; a perpetual license will cost $100,000.

Customorder 2.0 is a packaged real-time order processing system to automate order entry, billing and inventory control functions, the vendor continued. It is intended to provide a centralized repository for customer product and account information and is said to be able to access information on a file basis.

The Customorder package is priced at $110,000 for a perpetual license. It will be available in the first quarter of 1983 after beta testing is completed, the vendor said.

Computeristics, Inc. is based at 2 Skiff St., Hamden, Conn. 06514.

First Showing Of 'EPS 2.0' Set

(Continued from Page 1)

and CMS environments. It is also available for Wang Laboratories, Inc. VS systems and Digital Equipment Corp. Decsystem-20 computers.

Version 2.0 of the software reportedly includes an additional 40 prewritten financial functions, as well as enhancements such as the ability to use reentrant code.

The optional full screen editor for FCS-EPS is said to provide the ability to add, review and monitor data a full screen at a time, rather than limiting users to making changes a line at a time.

The enhanced package also features an integrated relational data base, as well as an integrated color graphics language, a vendor spokesman noted.

The basic price for FCS-EPS is $48,000. The integrated relational data base is available for an additional $38,000. The integrated color graphics language costs an additional $12,000. The optional full screen processor/editor is priced at $6,000.

EPS is headquartered at One Industrial Drive, Windham, N.H. 03087.

Otting Elected DPMA Regent

PARK RIDGE, Ill. — Edward A. Otting, director of corporate information systems at Eli Lilly and Co., has been elected a regent of the Data Processing Management Association (DPMA) Education Foundation, William Hetzel, foundation president, has announced.

A native of Indianapolis, Otting has been with Lilly since 1957. He was promoted to director of corporate information systems and services in 1973.

The DPMA's Education Foundation was established in 1975 for the purpose of expanding educational opportunities for information systems professionals and to conduct research programs of benefit to the information processing industry, academia, business, government and the public.

JES WRITER SUPPORT
FOR 326X and 328X PRINTERS

- All protocols, BSC, SDLC, DSC, SCS
  326X, 328X local or remote
- Standard JES classes & destinations
  No user retraining, same JCL
- Shares printers, VM, CICS, IMS, others
  Printers double as RJE devices
- No mods to JES, VSI, MVS, VTAM, TCAM
  Single ASID, low resources
- Automatic and attended operation

Levi, Ray and Shoup, Inc.
P.O. Box 18538 • Dallas, Texas 75218
(214) 324-2635 • Telex (810) 751-0295 Spedex

Court Upholds $2 Million Award to NCR User

(Continued from Page 1)

with fraud, which we proved, and that's that," said Richard Perez, the user's counsel. "I'm not a constitutional lawyer, but I don't see where it is a case the U.S. Supreme Court would be interested in reviewing. The case was tried on the basis of the state laws of California, not federal laws." (The case originated in California state court, but was removed to federal court by NCR on the basis that the company is an out-of-state vendor.)

NCR's attorneys declined to request a rehearing at the appellate court level, as was their privilege. This fueled speculation that the company may not carry the litigation and its attendant expenses any further, Perez offered.

Original Award

The original U.S. District Court award, handed down by a six-person jury in March 1981 [CW, April 6, 1981], granted the Glovatorium $2.3 million in compensatory damages "for intentional misrepresentation, breach of warranty and breach of the implied covenant of good faith" on the part of NCR.

That award, now close to $2.6 million including interest, breaks down into $2,073,559 for punitive damages, $227,513 for misrepresentation, $51,626 for breach of warranty and $7,280 for bad faith.

Glovatorium's suit charged that the NCR System 8200 minicomputer and Spirit software package the dry cleaner bought in 1975 never functioned at better than 20% of its warrantied capability.

Ten-Day Trial

Largely because of the testimony of former NCR employees, it was determined at the 10-day jury trial that NCR officials knew the system was defective and sold it with knowledge of its defects.

NCR claimed its Oakland sales force disobeyed a written corporate order not to sell a modified Spirit 8200 system to the Glovatorium, saying the modifications were thus carried out by unauthorized personnel. But NCR was unsuccessful in proving to the courts that its sales representatives were anything other than "managing agents" of the company and therefore acting on the behalf of the corporate office in Dayton.

Further evidence showed that NCR engaged in a deliberate and concerted attempt to cover up the defects. "For instance, one of the problems experienced with the system was that it was so slow that many clients found they could accomplish the same task faster if it were done manually rather than using the Spirit system," the appeals court judges wrote in their decision. "NCR, however, developed and distributed a demonstrator model for the system to be used as a sales tool that was specifically designed to function very, very effectively and very fast, much more so than the actual Spirit programs did.'

"Thus, it is reasonable to infer knowledge of this defect on the part of NCR since the demonstrator was specifically designed to cover it up."

Further testimony cited by the appeals court judges revealed that the 8200 Spirit system was never designed to perform a route accounting function. Yet the Glovatorium was sold the system to perform a route accounting function, the judges wrote.

Moreover, NCR service employees had deliberately chiseled off and switched the serial numbers on a defective disk drive sold to the Glovatorium in an attempt to pawn off an older model in place of the newer, defective one, according to the case. This charge, too, was supported by testimony of former NCR employees.

Glovatorium VP

In a telephone interview, Stephen Depper, Glovatorium vice-president, said he is "still trying to keep my feet on the ground" over the news of the court verdict.

"We knew we'd win, but there was some question what changes the court might make to the damages awarded," Depper said. "It's sort of too bad the whole thing had to go this far, though."

Depper was referring to a third alternative that NCR still may pursue in the matter, an alternative Depper and Perez claim they previously explored — an out-of-court settlement.

Depper said he originally asked NCR simply to remove the $60,000 system and refund Glovatorium's money. Later in the midst of the District Court hearing, Depper said NCR and Glovatorium were "within a lousy few thousand dollars of settling," but that NCR would not up the ante and Glovatorium would not lower its bargaining peg. The amount bandied about then, Depper said, was "far, far less than $2.3 million."

Again, in early August of this year, NCR made an out-of-court offer anticipating the circuit court's decision. But this offer "was not even in the ballpark," Depper claimed.

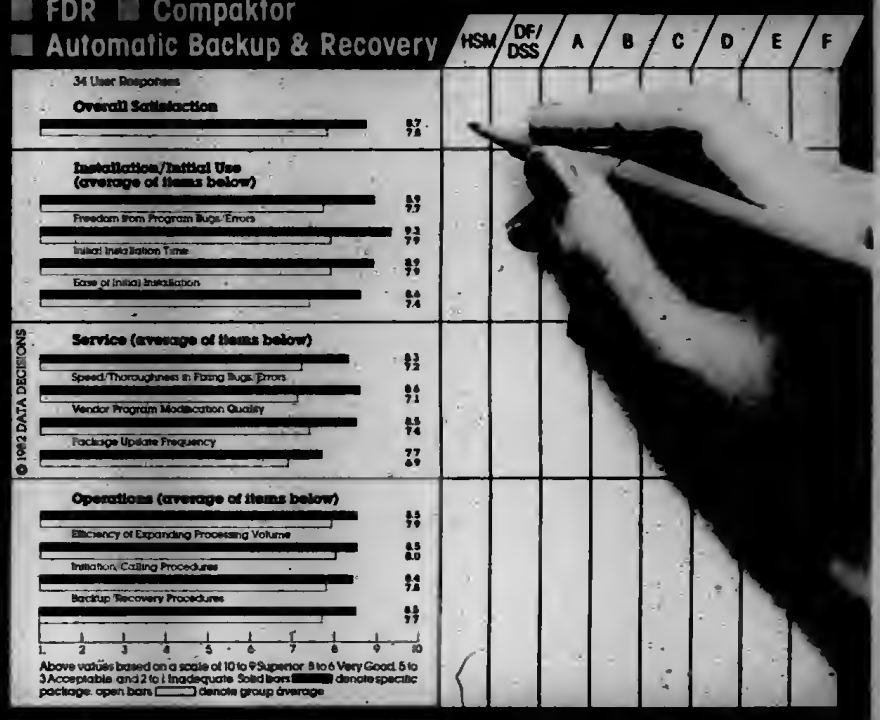
Both Depper and Perez said they are open to further out-of-court offers, but added they would be loath to sign any nondisclosure statements that NCR may request in return for settlement.

"You'd have to say at this point their [NCR's] leverage is next to nothing," Perez said.

Are You Using the Best

DASD MANAGEMENT?

Compare for Yourself!



© 1982 DATAPRO

49 User Responses

	Excel.	Good	Fair	Poor	MAUR*	CA**
Reliability	42	7	0	0	3.86	1
Efficiency	40	8	1	0	3.80	1
Ease of installation	34	12	1	1	3.63	1
Ease of use	35	12	2	0	3.67	1
Trouble-shooting	23	18	4	0	3.42	2
Documentation	17	31	1	0	3.33	2
User Education	7	21	11	0	2.90	2
Vendor's Maintenance	18	24	1	0	3.41	2
Overall satisfaction	36	13	0	0	3.73	1

*Mean Average User Rating on a scale of 4.0 for Excellent **Cluster Analysis

4200 Users
Proven Record of Reliability

INNOVATION
DATA PROCESSING

Getting a DP Job: Choosing the Road . . .

By Tim Scannell
CW Staff

NEW YORK — Degree-granting colleges and vocational schools offer extremely different career paths into data processing. However, both can ultimately result in the same thing — employment.

The problem, however, is selecting the right path for you.

The following are some questions that prospective students should ask the schools they are considering attending, the students at those schools and their graduates. The questions were posed by Laura Steibel Sessions, a Robert Half recruiter and author of the forthcoming *How to Break Into Data Processing*, and Michele Briggs, also a Robert Half recruiter, who helped Sessions research the book.

In the case of a college, administrators should be asked:

- What kind of a computer is available for student use?
- How state-of-the-art is the data center?
- What hours are the data center open for student use?
- How much access time is allotted for each student's computer use?
- What type of business and academic credentials does the faculty have?
- What is the average size of the classes?
- Does the school offer any work/study programs?

Proprietary schools might be asked:

- Does the school offer any kind of a refund policy that would guarantee a return of a portion of the tuition if the student is not satisfied with the training?
- What is the dropout rate?
- What is the total cost of the course?
- How many college credits are offered by the course?
- How many graduates a year does the school turn out?
- What percentage of students eventually break into data processing?

Many schools offer prospective students a chance to query present students on activities at the school. Typical questions might include:

- Are the number of terminals available for student use adequate to meet the demand.
- Does the faculty have time to devote to students outside of class time.
- Is the faculty knowledgeable enough to answer your technical questions.
- Are they up-to-date with the latest technologies and is the school very theoretical or more practical in its approach.

In the case of proprietary schools, prospective students should also ask if there is adequate time to learn course material and if the courses are well organized.

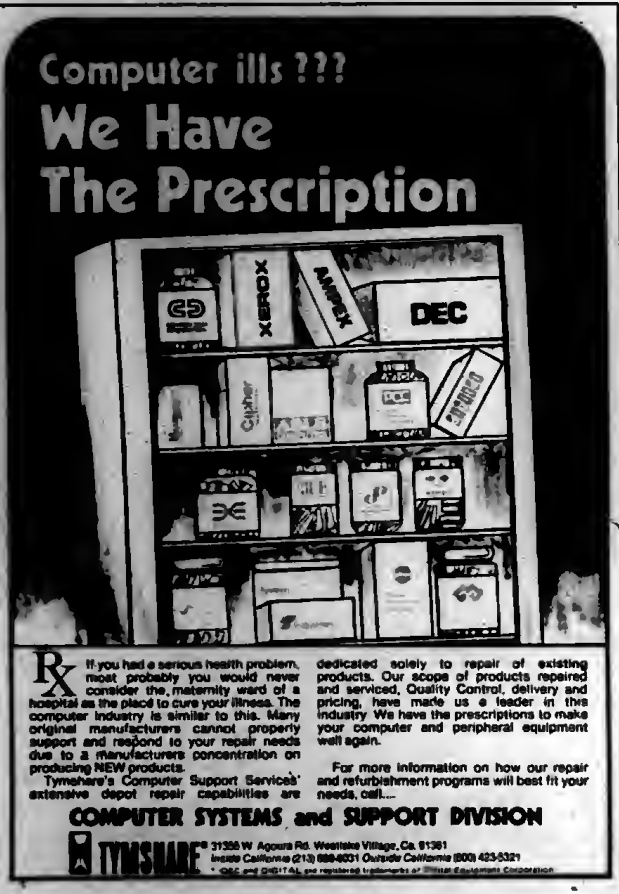
Programmers with college degrees should be asked:

- Did a degree help or hinder their job search.
- Was the placement center of any assistance.
- Once they found a job, was their education adequate for what was expected on the job.

. . . And Getting to the End of It

In *How to Break Into Data Processing*, scheduled for publication Nov. 5 by Prentice Hall, author Laura Steibel Sessions offers advice on how to break into the DP job market. Excerpted and condensed, here are 10 tips on how to get your first job as a programmer:

- *Get the proper training.* This can be a four-year degree, a two-year degree or a certificate from a technical training school. Whichever method you choose must include advanced studies in at least one or more programming languages. The choice of languages should be based on their popularity in the local area.
- *Analyze your background and training and compare it with the competition.* Choose five accomplishments that can illustrate what makes you a good data processing career candidate. These five accomplishments will become your sales points. Remember, the competition doesn't have on-the-job programming experience either, so the only differences are going to be in attitude and past work experience.
- *Be determined.* Know exactly what position you want. Study the field so that you will understand what responsibilities go with each position.
- *Prepare a solid and informative resume, one that expresses your background in its most favorable light.* A resume gives you approximately two minutes to convince a manager to permit an interview. Therefore, add everything that will help make a positive impression. Don't exaggerate your skills. Exaggeration may get an interview, but it will never help get or keep the job.
- *Write an eye-catching cover letter.* Explain why your product is superior to the competition's. Use accomplishments to illustrate the benefits and features of your experience. A resume is a good place to tell what you have accomplished, but the cover letter is where you explain why these accomplishments make you best suited for the job.
- *Plan an organized job search.* Use your background. For example, if you have worked in retail, apply to retail data processing shops. Don't ignore whatever makes you unique. Also, plan job strategies the night before — what letters to write, telephone calls to make — and stick to them.
- *Apply to true hiring managers.* Call to find out the name of the data processing manager and write a personal letter. This is far more effective, especially in small and medium-size companies, than strictly applying to personnel departments.
- *Accept all interviews and consider every job offer.* Never turn down an offer you haven't received.
- *Sell yourself in the interview.* No manager has ever learned anything about a candidate through osmosis. Tell the interviewer why you should be hired and what you can do for the company. For technical interviews, if you don't know the answer, don't fake it. Tell the truth, but in a positive way. Stress that you are eager to learn and are able to learn quickly.
- *Finally, dress professionally.* Data processing is a sensitive area. Companies do not want to hire a person who looks like a loser and give that person intimate access to the company files. If you say you are hardworking, prove it by citing concrete past experiences.



Mitsubishi Pleads Innocent

SAN JOSE, Calif. — Attorneys for Mitsubishi Electric Corp. have entered an innocent plea on behalf of the Japanese electronics firm, which was charged with conspiring to transport stolen IBM trade secrets out of the country.

A federal grand jury indicted Tokyo-based Mitsubishi along with four of its employees on July 19 in connection with a Federal Bureau of Investigation "sting" operation that ended June 22 when Mitsubishi and another Japanese firm, Hitachi Ltd., were charged with trying to buy IBM trade secrets from an FBI agent posing as a consultant. The Mitsubishi employees are charged with paying the FBI agent $26,000 for confidential IBM information.

Federal District Judge William Ingram set a Jan. 18 trial date for Mitsubishi Electric and one of the four employees, who also pleaded innocent to the charges. The three other Mitsubishi employees have yet to enter pleas.

Corrections

Relative performance figures for National Advanced Systems, Inc. AS/9060 and AS/9000DPC processors were inadvertently transposed in *Computerworld's* Aug. 2 Hardware Roundup. The AS/9060 should have a relative performance rating of 510 and the AS/9000DPC should be 708. Also, the AS/9000N relative performance rating should be 314, not 214.

In the product announcement for Daly & Wolcott's credit and collections package for users of IBM's System/34 and System/38 [CW, Aug. 30], the name of the vendor was misspelled as Daily and Wolcott.

In the chart on Page 11 of the Sept. 13 issue, titled "Fully Equipped Backup Sites," the address for NVIP, Inc. was incorrect. The correct address is NVIP, 4850 Street Road, Trevose, Pa. 19049.

Vocational Schools — Part 3

Many DP Jobs Open, But It's a Buyer's Market

By Tim Scannell
CW Staff

Approximately 52,000 graduates were turned loose last year by colleges and vocational schools across the U.S. to make their mark in the data processing job market. Unfortunately, many soon discovered that a college degree or technical school background did not guarantee easy entry into the DP work force.

In this last part of a three-part series, Senior Editor Tim Scannell examines the entry-level programmer job picture and discusses how a person seeking employment can prepare both educationally and competitively for that all-important first job.

In *The Graduate*, Dustin Hoffman was advised to set his career sights on plastics. If that movie were shot today, he probably would have been advised to set his sights on computers. Or, more specifically, computer programming.

However, just as movies are no more than the products of an screenwriter's imagination, the "real world" of data processing may not always offer the employment, job security and financial rewards expected by those new to the field.

Besieged by thousands of wet-behind-the-ears graduates, an increasing trend toward specialization and the recession, today's market for entry-level programmers is glutted. It is a buyer's market, and employers can pick the job candidates who are a little fresher, better schooled and have more potential than others.

Yes, high-paying jobs *are* available in the computer industry. The Bureau of Labor Statistics predicts that from now until the end of this decade, there will be a continuing shortage of 25,000 computer programmers each year. It also forecasts that by 1990, more than two million people in the U.S. will be working with computers or in computer-related jobs.

Programming salaries are at an all-time high, apparently immune from the salary and cost-of-living freezes that are plaguing other industries. Fox-Morris Personnel Consultants in Philadelphia recently reported that aystems analysts with about four years' experience could expect to earn up to $40,800 annually — a nearly 16% increase over last year'a figures [CW, Sept. 6].

And entry-level programmers are commanding salaries of $20,000 to $25,500. That's up more than 15% over last year.

One Hitch

The one hitch is that while experienced programmers — those with five to 10 years in the industry — are in demand, those just entering the job market face tough competition, according to educators and recruiters.

Last year, about 52,000 computer science and programming graduates were pumped out by the thousands of vocational schools, universities and colleges across the country, according to Input, Inc., a California research firm. The majority attended vocational schools or completed a few classes while the rest opted for six- or nine-month courses or full degree programs.

Those graduates competed for about 24,000 entry-level programming job openings. Although the final tallies are not yet in, the competition appeared to be even hotter this year.

So why do students continue to sign up for data processing courses and enroll in programming classes? According to at least one recruiting expert, they sign up for the benefits down the road and not for immediate success.

"There is a glut of entry-level programmers, but still a need," observed Laura Steibel Sessions, an employment specialist at Robert Half of Long Island, Inc. and author of a soon-to-be-released book that focuses on landng a job in the increasingly tough data processing market. "People are getting those entry-level jobs, it's just that they are a little harder to get."

The recession has taken the largest toll on entry-level jobs. Hard hit by increasing operating costs and dwindling budgets, many DP shops are cutting back on the number of new hires in their DP departments.

For example, Gary G. Sprecker, director of management information systems at General Mills, Inc. in Minneapolis, plans to hire only four or five new programmers this year — about half the number hired last year. The company will hire fewer people because more employees at its main DP center have decided to stick with the company to ride out the recession, lowering the turnover rate,

(Continued on Page 10)

ALL YOU NEED TO CUT CICS DEVELOPMENT TIME IS A JUNIOR COBOL PROGRAMMER AND SCISSORS.

CUT YOURSELF IN ON ACCOLADE AND INCREASE YOUR PRODUCTIVITY 800%.

ACCOLADE is a new concept in application development software for your CICS system. Sign up now for a free demonstration. We'll show you and your Jr. COBOL programmer how to develop CICS applications on-line quickly and easily with no sacrifice in CPU efficiency. Fill out below and mail to: David Alschuler, Vice President, Multiplications, Inc., 1050 Massachusetts Avenue, Cambridge, MA 02138.

Name _____
Title _____
Company _____
Address _____ Phone _____
City _____ State _____ Zip _____

MULTIPLICATIONS ✳

Novice DPers Face a Demanding Job Market

(Continued from Page 9)

Sprecker said.

General Mills currently has about 60 programmers on staff at its Minneapolis site.

In-house training programs have also taken a slice of the opportunity pie, permitting some companies to drop outside recruiting. The philosophy is that it makes more economic sense and can significantly boost corporate morale if new positions are filled from a company's ranks rather than through a newspaper ad or job recruiter.

The only problem with this is that once in-house people are trained to cross the bridge from a blank coding sheet to a working computer program, they increase their worth by several thousand dollars and often leave the sponsoring firm for greener pastures, one industry source said.

Both of these factors and the increasing number of students that graduated from courses and schools each year have forced companies to select their staff more carefully than in previous years.

For instance, the larger corporations are tending to recruit new hires from college campuses and graduate schools because they offer a more complete, management-oriented education, according to Roland Spaniol, president of the 24,000-member Institute for Certification of Computer Professionals.

Spaniol notes that college-educated DP graduates have a better chance at landing a job because they have demonstrated they can jump through "the hoops" — a term describing the rigors and extended education of a four- or five-year institution. These hoops provide a good basic training for obstacles that the graduates might later encounter in the business world.

Larger Firms

Most industry experts agree that the larger the company, the more it emphasizes a college degree. "If you don't have some sort of a degree, you do have a little bit of a problem," Robert Half's Sessions explained. "Especially now, as the recession is hurting everybody including data processing.

"Way back when — when a lot of these top managers first got into the field — they did not have degrees in data processing. But now that they have so many people to choose from, those managers can afford to ask for degrees."

Many firms refuse to hire DP candidates with only a vocational school background. General Mills, for example, usually recruits the bulk of its yearly quota from college campuses. The only vocational school graduates General Mills considers are those like ex-teachers who have undergone vocational DP training as part of a retraining effort.

Vocational school graduates are qualified for certain DP positions, but usually launch their careers with a smaller company or start-up firms that often pay significantly lower salaries than larger corporations. The job outlook for these graduates is not bleak, as the placement figures of any reputable vocational or technical school will show. However, the competition is a bit tougher because one- or two-year schools can produce up to three times as many graduates per year than a regular four-year college program.

Easy Time

The people who seem to have the easiest time entering the DP job market are those with a college degree and some structured training or experience in the field, Sessions observed. In the short run, however, it may not matter how much education you have, but how well you can sell yourself to your prospective employer.

Robert Half of Long Island recently started a bimonthly class for entry-level people that is basically a finishing seminar for people seeking the employment grail. The class usually draws 30 to 50 students — most with college degrees — and offers a point-by-point primer on landing a job that ranges from resumes to the proper clothing.

In her soon-to-be-published *How To Break Into Data Processing*, author Sessions points out that a neatly prepared resume, a well-rehearsed presentation and the correct body language can be pivotal in ending up on the right side of an employer's door.

In one instance, she noted, a prospective employer deliberately positions furniture throughout a room to see which chair an applicant selects. If a job seeker chooses a chair close to a wall, he interprets this as a signal for unaggressive and subdued behavior. Consequently, "he thinks he will hide in the corner all the time," she said.

Other managers look for mirror images of themselves, giving slight preference to people who have basically followed the same educational course or have identical albeit less experienced backgrounds.

Hearings Stalled On Matching

WASHINGTON, D.C. — The Senate Government Affairs Committee has postponed hearings on computer-matching programs originally scheduled for Thursday.

Citing the press of legislative business as Congress nears its election-time recess, the committee said the hearing will be moved to early next year.

At that time it hopes to devote two days of hearings to the increased government use of computer matching to police government assistance programs.

$595?

$595!

Another Dumb idea.

We're offering our world-famous Dumb Terminal® video displays at prices that make them smarter buys than ever.

We invented "Dumb" in 1975. Since then, our Dumb Terminals have become the industry standard. Often copied, but never duplicated.

We ship more Dumb Terminals than anyone else in the world. And industry studies show we're the favorite choice for most users.

But that doesn't mean you have to pay a lot to get our tough little terminals. Whether you choose the ADM 3A with the same reliable features that have made it a best-seller. Or the ADM 5 with its numeric keypad, cursor control keys, visual attributes, and limited editing. Both accommodate an optional Vector Drawing Graphics Board. And you won't have to wait to take delivery. We can ship immediately.

Both terminals are backed by the industry's most comprehensive service program. With 3000 service centers nationwide. Plus

Information Centers Educate Users

Consultant: IRC as DP User First-Aid Station

By Jim Bartimo
CW Staff

BOSTON — "I look at the information resource center [IRC] as a first-aid station where users come for help with their problems. The DP center is the hospital for major problems."

CW Photo by J. Bartimo

Daniel J. O'Connell

This simile was made by office automation consultant Daniel J. O'Connell of Weston, Mass., at The OA Forum here last week.

A consultant who has helped companies implement IRCs, O'Connell provided a blueprint for the establishment of an IRC. To provide better and more information to the end users, "we want to provide the right information at the right time," he said.

The introduction of an IRC has resulted in a 30% decrease in DP backlog of 10 companies he has worked with. But the success of the concept led to another backlog. "MIT conducted a study for IBM and found a backlog of two years of companies who want an IRC and an invisible backlog of two more years," he said.

He defined the IRC as an entity that provides education to users, acts as a consultant to departments, provides data in a usable format and creates user-friendly interfaces for more difficult software tools. He suggested the use of fourth-generation software languages to allow users to perform their own programming.

CW at OA Forum

The IRC should be located near the center of business activity, O'Connell said, and can be staffed by as few as three and as many as 15 professionals. IRC staffers should be innovative with a strong teaching ability and at least some exposure to technology and application programming.

The IRC staff should be under the DP department, with a liaison position called the technical adviser. Other positions might include a director, secretary, manager of consultants and one consultant per application that is offered by the center, he said. These employees should be at the same level as program analysis and development and have more of a business than technical background.

Although it may provide some disadvantage, O'Connell said that some kind of chargeback system must be maintained. "Sometimes people think it's [IRC] worth nothing if you pay nothing for it," he said, but it is still necessary to maintain control.

To realize savings in quantity purchases, the center should be in charge of purchasing and distributing personal computers. This will allow the center to oversee training and maintain control of the proliferation of micros in the company.

The DP manager should have no trouble justifying an IRC to senior management: "The people I know who have an Information Resource Center say that it sells itself." In addition to cutting the DP backlog, the concept can bring improvements to such intangibles as decision making, quality and quantity of information and flexibility, O'Connell said.

Input Needed for I/O Report Output

Data entry has often been blamed for delaying the data processing department's production schedule and introducing countless errors into a firm's computer system. To find out what is new in data entry technology, *Computerworld* is planning a special report on I/O in November.

If you are using an innovative I/O procedure or are an expert in the data entry field, CW would like to hear from you. For example, if your company has just solved a tough data entry problem, your story could be used as part of the special report.

Subjects like entering data via networks, innovations in voice technology and alternatives to key-to-disk data entry systems are preferred. Other submissions will also be considered.

Articles should be typewritten, double-spaced and can be submitted with any available pictures, charts or other graphics.

The deadline is Oct. 8 and manuscripts should be sent to Tom Henkel, Writer/Analyst, *Computerworld*, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

walk-in Express Depot™ service, on-site service, and extended warranties.
ADM 3A, $595. ADM 5, $645.
Any other price is over Dumb.

LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION

CW 9/20
Please send me further information.
NAME
TITLE
COMPANY
ADDRESS
CITY STATE ZIP
PHONE
Mail to: Lear Siegler, Data Products Division
714 North Brookhurst St., Anaheim, CA 92803
Or Call: 800-LEAR-DPD or 714-774-1010

EVERYBODY MAKES TERMINALS. ONLY WE MAKE LEAR SIEGLERS.

SALES & SERVICE: · Boston (617) 456-8228 · Chicago (312) 279-7710 · Houston (713) 780-9440 · Los Angeles (714) 774-1010, Ext. 219 · Philadelphia (215) 245-4080 · San Francisco (415) 828-6941 · England (04867) 80666
OEM SALES: · Boston (215) 245-1520 · Chicago (312) 279-5250 · Houston (713) 780-2585 · Los Angeles (213) 454-9941 · Philadelphia (215) 245-1520 · San Francisco (415) 828-6941 · England (04867) 80666

Dumb Terminal® and Express Depot™ are trademarks of Lear Siegler, Inc.

$645?

$645!

CW Photo by J. Bartimo

Howard Anderson

Anderson Predicts IBM Will Dominate Desktop Market by 1986 With 19.2% Share

By Jim Bartimo
CW Staff

BOSTON — IBM will dominate the desktop computer market by 1986 with 19.2% of the market, Yankee Group President Howard Anderson said here last week.

Speaking at The OA Forum on the IBM Personal Computer and its effect on the microcomputer market, Anderson outlined some of the ways he expects the mainframe giant to seduce an estimated four million microcomputer buyers by 1986.

Among those ways is marketing its Personal Computer and peripherals through Sears Roebuck And Co. — one example where IBM "threw away the corporate cookbook" and proved itself to be a "flexible giant," Anderson said.

CW at OA Forum

Another way IBM will come to dominate the market is with this year's $1.6 billion research and development budget for its Personal Computer.

"The Personal Computer is IBM's most important product," Anderson said, claiming that it would change the company by bringing an end to "laissez-faire marketing, mediocre software and inadequate hardware."

Although Anderson maintained that the IBM Personal Computer is a desktop workstation and "a personal computer in name only," he believes that IBM needs the volume of the home market.

Expecting the Personal Computer to replace IBM's 3270 terminals, Anderson predicted that the micro's use under the company's Systems Network Architecture (SNA) would seriously hurt other personal computer manufacturers such as Apple Computers, Inc. and Tandy Corp.

Because SNA software connects IBM hardware in a network, adding noncompatible micros would be a problem. Anderson referred to SNA as the "system for negating alternatives."

IBM will also "keep the competition reeling" with a product announcement every month, Anderson said.

In a similar vein, he predicted that Apple could lose its front spot in the market by failing to introduce new products.

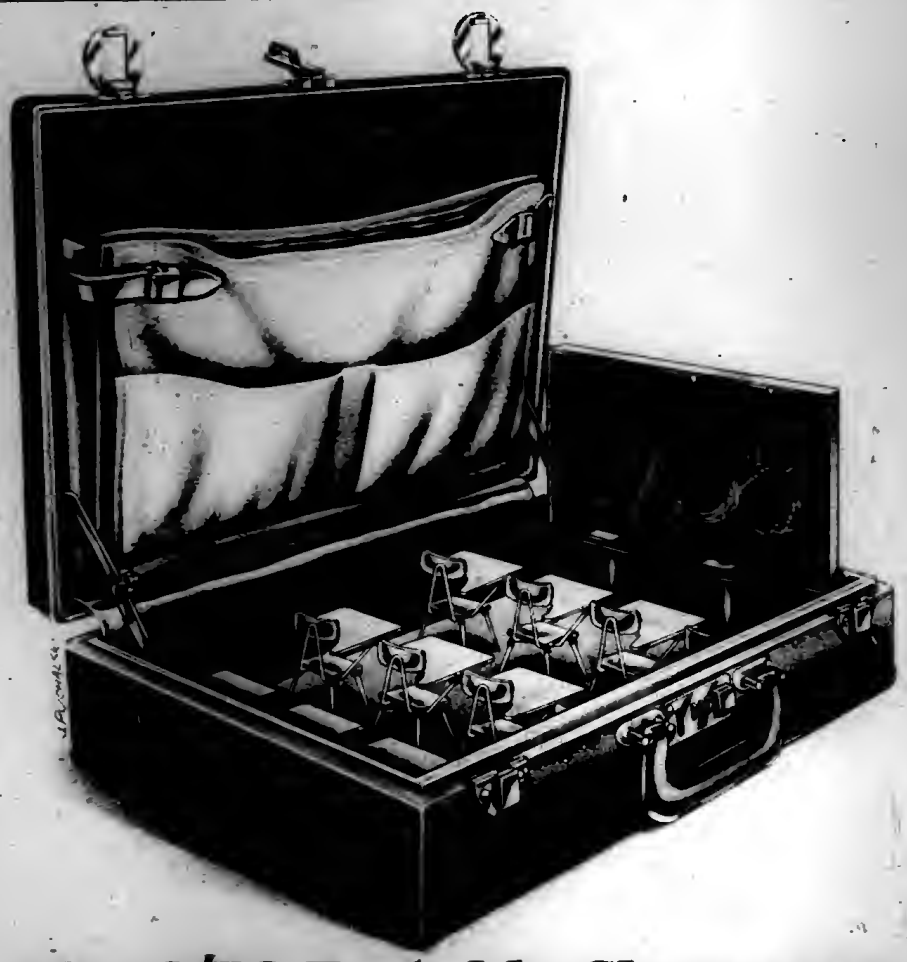
Pricing Another Factor

Pricing will be another factor in IBM's dominance. It will market neither the lowest nor the highest priced equipment, Anderson said, always keeping at 115% of the lowest prices.

"IBM is turning into a 'must carry' for retail outlets," Anderson said, predicting that other vendors may find themselves paying for shelf space in retail stores and losing profits as a result.

IBM made two major mistakes in the past few years by not entering the minicomputer and private branch exchange (PBX) markets soon enough, and it is determined not to fall behind in the micro market.

Accordingly, Anderson cited what he saw as the two cardinal rules of IBM: "Never let anything get between IBM and its customers," and "never let anything get between IBM and its future markets."



The S/38 Portable Classroom

A Better Alternative from AUTOMATED TRAINING SYSTEMS

Los Angeles, 21250 Califa, Woodland Hills, CA 91367 • (213) 999-5753 • Telex 686121
New York, 26 Court Street, Suite 603, Booklyn, NY • (212) 858-0606
Australia, 21 Joyce Avenue, Glen Waverley, Victoria, 3150 • (03) 656-1929 • (03) 560-6603 • Telex 38952
London, 70/71 New Bond Street, W1Y 9DE, • (01) 499-7911 • Telex 27944

CALL TOLL FREE 800-423-5205

(Also available The S/34 Portable Classroom)

Insurance Policy Out For Mini Owners

SEATTLE — Safeco Insurance Corp. has announced an insurance policy for minicomputer owners. The Mini-Computer Protection Plan features broad all-risk coverage for the minicomputer hardware, whether owned, rented or leased, according to the insurance company.

Also included in the policy are protection for the software at each location, extra expense if the computer is out of service due to a covered loss, coverage for equipment and software in transit or at a temporary location and coverage for duplicate or backup software, newly acquired hardware or for equipment moved to a newly acquired location.

Coverage can go up to $250,000 and includes water damage, flood and earthquake damage. Additional information is available from the company at Safeco Plaza, Seattle, Wash. 98185.

Exec Dubs IBM WP Package 'Perhaps the Worst,' Rates Fortune Systems Best

By Bruce Hoard
CW Staff

BOSTON — IBM's word processing package for its Personal Computer is "perhaps the worst" WP package for personal computers designed to operate in an office automation environment, Thomas R. Billadeau, president of The Office Systems Consulting Group, Inc., contended here last week.

Speaking at The OA Forum sponsored by CW Communications, Inc., Billadeau said that Fortune Systems Corp. offers the best WP package for an OA-oriented microcomputer. Billadeau also spoke well of WP packages from Wang Laboratories, Inc. ("a high hopeful") and Digital Equipment Corp. ("They haven't sold it yet").

The consultant blamed IBM's former divisional structure for the problems he sees in the word processing package that comes with its Personal Computer.

Previously, one division signed off on another division's products, Billadeau explained. Specifically, Billadeau accused the former Office Products Division (OPD) of vetoing what he called an excellent WP package because it would have devastated sales of OPD's Displaywriter WP system.

Asked why he omitted personal computers from Apple Computer, Inc. and Radio Shack from his ratings, he replied, "It is my opinion that those are not office personal computers."

He explained this by noting that Apple and Radio Shack micros frequently represent all the computing power extant in the organizations they serve. They are also frequently found in environments that are less demanding than those in his conception of the automated office, he added.

Although the WP package is the logical place to start when designing user interfaces, most personal computer vendors fail to do so, Billadeau continued, adding that minicomputer vendors are guilty of the same omission.

User Interfaces

According to Billadeau, there are three categories of user interfaces: ease of use, ease of learning and ease of operation. Ease of use is not necessarily enhanced by using a menu-oriented package, according to Billadeau. Menus look good at first, but may become complicated and convoluted, he said.

"That's certainly not what we're looking for," Billadeau said.

Very little has been done to upgrade ease of learning, Billadeau asserted.

For example, Billadeau recently acquired a DEC Decmate system in which the box that contains the manuals of documentation was larger than the box that contains the actual hardware. "There are 17 manuals with that system," according to Billadeau.

Ease of operation may be facilitated by a command- or code-oriented system, but to be efficient, such a system must be easy to learn.

As a component of the user interface, the type of CRT screen found on most personal computers is more than adequate for WP applications, Billadeau claimed.

CW at OA Forum

Keyboard Problems

However, there are many problems when it comes to keyboards. As long as personal computer vendors sell computer-oriented keyboards, typists will not use them in the office, Billadeau declared.

He lamented the lack of more experimentation on keyboards, saying an alternative to conventional models might make "significant inroads."

The consultant said there is a need for most software vendors to create WP packages that more closely emulate those found on stand-alone word processors. He called for packages that provide automatic ongoing guidance for users, without the users having to specify it.

Several Categories

WP systems on personal computers fall into several categories, including command, mnemonic, dedicated function key, menu and soft key orientation, Billadeau said.

Of those, the command orientation is the most popular. With that system, the user types in a command and the system responds. Command orientation systems are the easiest to implement and provide the most continuity between software packages, he said.

Mnemonic orientation systems employ logical words or parts of words in order to prompt the system. Billadeau described mnemonic systems as "enhanced versions of the command model."

The dedicated function key orientation was a good idea to begin with, but as more and more functions were developed, there were not enough keys to cover them all, he said. The system has now been combined with the command system to employ the best features of both.

The menu orientation system is best used when no more than seven choices are displayed on the screen simultaneously, he said. Menu systems should not require more than one keystroke to be activated, Billadeau added.

Soft key orientation is a newer method that he referred to as "menus applied to a keyboard."

As an example, Billadeau alluded to the Hewlett-Packard Co. personal computer which, he said, features blank keys on top of the movable keyboard that correspond to commands displayed on the bottom of the CRT screen.

END DISK CONVERSIONS FOREVER.

Now all your software can use any type of DASD device—CKD or FBA—without changes to programs or JCL.

- Place ISAM, DA, BDAM or DBOMP files on FBA disks or any CKD disk
- Eliminate costly mixed-disk environments
- Use new IBM disk types without conversion
- Convert to FBA in hours rather than months
- Reduce program execution time by half
- Use any disk type for data storage without converting to VSAM
- No modifications to IBM or user software

For a free information kit describing Instant-FBA, contact the SDI office nearest you.

SDI

New Jersey (201) 569-7212
Minnesota (612) 835-6822
Texas (214) 241-8730
California (415) 572-1200

or write: 1700 S. El Camino Real, San Mateo, CA 94402

Education For The Real World

Productivity is inversely related to the distance between the classroom and the real world. The shorter the distance, the greater the productivity.

The goal of ACI's educational services is to shorten that distance in both its public and on-site course offerings. ACI provides training based on real-world experience few companies can match.

For over sixteen years ACI has been providing high level consulting services to Fortune 500 clients. ACI has been instrumental in developing and implementing state-of-the-art systems in IMS and CICS installations nationwide.

The instructors for ACI's educational services are rigorously selected from among our active consultant staff. They then undergo extensive training to enhance their educational skills. And when their teaching assignments are completed, they periodically return to the field for further consulting work.

So if productivity in the real world is your goal in seeking out educational services, you should feel comfortable turning to ACI. After all, we've been there.

For more information about ACI public and on-site courses, please call Cathy Cardwell or Norm Noerper at 312/346-8640

ACI Public and On-Site Curriculum

IMS Courses
- Introduction to IMS DB-DC Systems
- A Manager's Introduction to IMS
- IMS Application Programming Workshop
- Advanced Topics for IMS Programmers
- IMS Fast Path
- IMS Debugging
- PL 1 Debugging
- IMS Message Format Service
- VSAM in an IMS Environment
- IMS Logical Data Structure Design
- IMS Data Base Design
- Quantitative Analysis of Data Base
- IMS Reorganization, Recovery, and Restart

CICS Courses
- CICS VS Fundamentals
- CICS VS Command Level Programming
- CICS VS-IMS Interface Coding
- CICS VS Debugging
- VSAM in a CICS VS Environment
- CICS VS Application System Design

aci automated concepts incorporated

Dept. A, 35 East Wacker Drive
Chicago, IL 60601
Telephone 312/346 8640

Silent Areas of OA Conversation Addressed

BOSTON — There is a lot of talk going around about office automation, but there are two areas where it is difficult to get a conversation going.

First, incompatible word processing systems often cannot find a common language; second, many companies' OA and data processing departments apparently have a hard time talking to each other.

Possible solutions for these integration problems in the office were discussed here last week at CW Communications, Inc.'s OA Forum by Patricia Seybold, vice-president of The Seybold Consulting Group, Inc. and editor of *The Seybold Report*.

"Most companies have 10 different kinds of equipment," Seybold said. The first step in solving this problem is to reduce the number of vendors used by an organization. A six- to 12-month study by an internal steering committee should narrow that number down to three, Seybold advised.

The next step is to tie the three types of equipment into a common network. One method suggested was a local-area network, but Seybold warned, "Many of you have been led to believe by vendors that a local-area network is a panacea for solving incompatibility problems."

Local-area networks will solve some integration problems, but "what we're all going to have to do in the next two to four years is find a mini or microcomputer with good communications capability and write our own conversion software," Seybold said. A photocomposition system like those used at many major newspapers is an example of a system with good communications capability, she suggested.

CW at OA Forum

Once the office automation equipment is talking to itself, the next step is to integrate WP with DP. "You can look at office automation as just word processing or as a [management information system] whose time has come," Seybold said.

Predicting an influx of IBM 3277 emulation software for use of non-IBM equipment in Systems Network Architecture, Seybold indicated that the integration of word and data processing will become essential to OA.

However, users must be able to switch easily from one mode to the other because of the interruptive nature of the office. A successful OA system of the future will allow a user to stop writing a report, switch to a spreadsheet package, pull out some figures and go back to text editing. Graphics capability will also add to the flexibility of the new office, Seybold said.

CW Photo by J. Santino

Patricia Seybold

TI Users Group Seeks Speakers

AUSTIN, Texas — The Texas Instruments, Inc. computer users group (TI-MIX) is soliciting speakers for its 12th annual international symposium, slated for April 5 to 8 at the New Orleans Hilton. Speakers are needed for 24 formal sessions on topics ranging from business management concepts to tips and techniques for the technical user. Abstracts are due by Nov. 1. A brochure containing a call for exhibits and presentations is available from TI-MIX.

Programmers, nontechnical users, marketers, managers, end users and resellers with a common interest in the company and related computer equipment are scheduled to meet at the symposium. Attendance is expected to top 1,200.

Registration at the door costs $150 and includes entrance to exhibits, four days of sessions, three luncheons and four informal receptions. Discounts for early registration, preregistration, one-day registration and group registration are also available from TI-MIX, M/S 2200, P.O. Box 2909, Austin, Texas 78769.

ELECTRONIC MAIL

For IMS DB/DC

Also other data base packages:

— Tables Handling
— Personnel Directory
— Daily Mail Control

Call or Write:

Chet R. Swiatek
B.B. SYSTEMS, INC.
Two South Pierce Ave.,
Arlington Heights, IL 60005
Tel. (312) 870-8885

But Attractive Rewards

Introducing OA Called Expensive, Frustrating

By Jim Bartimo
CW Staff

BOSTON — Introducing office automation into an organization can be expensive, time-consuming and frustrating, but the rewards are attractive, John J. Walsh, president of Office Technology Group, Inc., told the OA Forum here last week.

Paramount among the reasons for implementing office automation is rising costs. "If you knock on the boardroom door of any corporation these days . . . you'll hear senior management saying, 'Let's cut costs,'" the consultant observed.

The expense of storage space, file cabinets and other conventional information storage methods are rising, as are telephone and mailing costs. Perhaps the most drastic cost increases come with salaries, which rise 10% to 15% annually.

In addition, the cost of meetings, which take up 65% of an executive's time, is running in the millions of dollars for some organizations, said Walsh, who also founded the Institute for Office Automation, Inc. Finally, administrative costs on the whole are rising at a rate of 10% to 15% per year, he said.

"There is an obvious need to move the fragmented, ineffecient and expensive environment of today to an integrated office system environment," Walsh said. By 1985, many businesses will agree with this when a 65% increase in the purchase of

CW at OA Forum

communications, office and computer equipment will be realized, he predicted.

But how can an organization go about installing the wide range of word processing equipment, personal computers, laser printers and software necessary to change the office?

Among the most necessary commodities are support from senior management, an entrepreneurial attitude

CW Photo by J. Bartimo

John Walsh

and technical skills, Walsh said.

The confidence of senior management must be gained because expenditures for OA will increase over the years of development. Many managers fail to paint the long-term picture for their supervisors and lose their credibility as they ask for more and more funds, Walsh pointed out.

"Senior management is very confused about office automation," Walsh said, so it needs to be well informed about the long-term needs of the project. Whoever wants to implement OA must sell the idea to senior management as if it were his own product, he said.

Fewer Vendors Seen

Addressing office automation in general, Walsh pointed out that the software is currently limited and that organizations are often weak on training.

As the field grows stronger, "you'll see a commitment to fewer and fewer vendors" in a single organization, he said. There will be fewer vendors but more different types of office products.

In anticipation of AT&T's entrance into the personal computer market, Walsh added, "In two years, AT&T will be first or second on the OA list [of top vendors]."

What do big companies have against little computers?

Little computers are giving more and more kinds of people a chance to work smarter. To project P&L and cash flow better. To create schedules and budgets better. To make better decisions. And the bigger a company gets, the more tempting it is for everyone to get their own personal machine.

There's just one problem. And every DP Manager and MIS Director knows what it is. In a bigger company, no one may be keeping track of the total cost of all those machines. (As affordable as one micro is, the cost of a company-full can be staggering.) And having a separate micro for each decision maker won't necessarily lead to better decisions.

So, while DP Managers and MIS Directors applaud the growth of computer-assisted decision making, they wonder if multiplying micros *alone* is the best solution.

ONE KIND OF SOFTWARE FOR ALL KINDS OF PEOPLE

Supercomp-Twenty is a spread sheet modeling program that starts with the friendliness of micro packages like Visicalc.™ But because our program is designed to be used throughout an entire organization, it also offers capabilities that were only available on expensive mainframe packages before.

With Supercomp-Twenty, the plant manager in Des Moines can compare estimated manufacturing costs with the plant manager in Dallas. And both models can be consolidated and reviewed by the financial planning staff in New York. Even if everyone's using *different* hardware.

ONE KIND OF SOFTWARE FOR ALL KINDS OF HARDWARE

Supercomp-Twenty is available on a wide range of computer systems, from micros to mainframes. So it works on computers most companies *already own*. Which can save a large company a small fortune. For example, all the users on a VAX,™ Prime, or Perkin Elmer computer can do their planning with Supercomp-Twenty for less than the cost of buying *one micro for one person*.

Of course, any large company's decision-support plans will require micros as well. Supercomp-Twenty runs on those micros. And it allows the flexibility to buy only the number you really need.

"FAR AND AWAY THE MOST USER-FRIENDLY SOFTWARE PACKAGE IN THE INDUSTRY"
—*Data Base Monthly*

Even the best software is useless if it's hard to use.

So Supercomp-Twenty comes with a tutorial built around prepackaged business models, a self-teaching HELP program, and a remarkably clear reference handbook.

Anyone, even if they've never touched a computer, can do their first plan in twenty minutes. And actually feel comfortable in a day.

LET THE EXPERTS BRING THE DEMONSTRATION TO YOU.

Supercomp-Twenty isn't sold at the corner store. It's being offered by many of the most respected consulting and systems companies in the country

They have the knowledge and experience to give anyone and everyone in your organization a hands-on demonstration. It's short. Simple to follow. And, judging by the 1000 companies who've purchased our software in the last 12 months, very convincing.

So before your organization spends more money on the wrong decision-support solution, see a Supercomp-Twenty demonstration for yourself. And invite anyone in your organization who wants to work smarter.

Call us today, or send in the coupon. It's one smart decision that will lead to a lot more.

☐ I want to see a Supercomp-Twenty demonstration.

☐ Send me more information.

Name _____

Company _____

Title _____

Address _____

City _____ State _____ Zip _____

Phone _____

On which computers would you like to use Supercomp-Twenty?

	MODELS
DEC	
PRIME	
PERKIN ELMER	
UNIX	
CP/M	
DATA GENERAL†	
IBM*	
HONEYWELL*	
HEWLETT-PACKARD*	

Supercomp-Twenty™ is a trademark of Access Technology Inc.
†Access Technology has different programs—Supercomp™ available for Data General Computers.
*To be released between October '82 and January '83.
CP/M™ is a trademark of Digital Research. Independent UNIX™ is a trademark of Bell Laboratories.
VAX™ is a trademark of Digital Equipment Corporation.
Visicalc™ is a trademark of Visicorp.

Access Technology

Better software for better decisions.

Call (617) 655-9191. Or write Access Technology, Inc., 6 Pleasant Street, S. Natick, MA 01760.

AUTOMATIC REPORT WRITER: IBM/34

Call for details about Fusion/1 DataQuisition, an interactive information retrieval and display system for non-technical users.

FUSION
FUSION PRODUCTS INTL.
415-361-1840
Telex 176-099 FUSION MLVY

AVOID DOWNTIME!
WATER ALERT
FOR COMPUTER AREAS

Warns you of water leakage in sub-floor wiring areas.

- Produces a loud, intermittent alarm when activated by presence of water.
- Completely self-contained . . . no wiring, no connections.
- Early water detection (1/64" water film activates alarm) provides maximum time for corrective action.
- 24 hour per day monitoring.
- Options include remote indicator, remote flashing light, and automatic telephone dialer.

8 Models from $59 - $110
Call or write for complete information.

Dorlen Products

Post Office Said Proposing Ecom Rate Hike in January

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — "New rates" for Electronic Computer-Originated Mail (Ecom), the controversial electronic message service begun by the U.S. Postal Service last January, will be proposed by next January, the service director said here last week.

If the rates are approved, they will probably become effective a year later, added Karen Uemoto, director of the Office of Ecom Operations.

Uemoto disclosed the prospective rate filing at the National Postal Forum, where she participated in a panel discussion of recently developed electronic mail services. While Uemoto refused to concede that the new rates would be higher than the present ones, it is widely believed that the Postal Service will have to charge significantly more for Ecom if it is to become self-supporting.

For example, when another panelist, a bulk mailer, was asked how his organization would respond to a significant rate hike, the panelist said, "We'll stop using the service." A short time earlier, this mailer presented a glowing endorsement of the present Ecom service, stressing the savings generated by the present rate structure.

There are now 65 Ecom customers and revenue is increasing rapidly, reported Greg Whiteman, Ecom's sales manager. Since last summer, monthly earnings have increased from $216,000 to $778,000, he added.

By the end of its first year, Ecom should transmit a total of three million messages, Whiteman estimated. For the next year, he expects a volume of 50 million messages and an annual revenue of at least $12.5 million, an increase of roughly 60% over current earnings.

At the moment, Ecom connects its customers with 25 serving post offices (SPO). Messages generated by the user's terminal are transmitted via dial-up or leased line to one or more of these SPOs. Each message, after being converted at the SPO into hard copy, and after being placed in a distinctive envelope, is delivered by a mail carrier in the usual manner.

Two-Day Delivery

Ecom officials said they are "committed" to delivering each message within two business days after it is input. Based on responses from two users who participated in last week's discussion, this goal is being met. Both indicated that a significant percentage of their Ecom messages are reaching the recipient within one business day after input.

One user, John Lucian, director of policy evaluation and project management at the Department of Housing and Urban Development, said his organization is saving $10,500 per year by using Ecom to distribute mortgage insurance premium notices. About 75,600 notices must be mailed annually, Lucian explained.

The former largely manual system cost 40 cents for each piece mailed. About 70% of this expenditure went for postage and most of the rest for mailing-room labor. Ecom has reduced the unit average mailing cost to 26 cents, Lucian said.

The other user, Owen P. Monaghan, director of systems and data processing for World-Wide Volkswagen Corp., Orangeburg, N.Y., said his company is saving approximately 11 cents per envelope by using Ecom to distribute promotional material to Volkswagen, Porsche and Audi owners in New York and two adjacent states.

Previously, the promotional letters, after being written by the company, were sent to a commercial mailing service. The total unit cost of this operation was 37 cents, said Monaghan, including the mailing service's charge of 5 cents for each letter.

NCR Quality without Chemistry

Now with the new 5340, you can have the convenience of dry silver with the quality of conventional NCR Computer Output Microfiche.

What's more, you also have the option of online or offline operation since now the entire NCR 5300 family of COM recorders is switchable to either mode. So with the addition of the new 5340, you have a choice of dry silver or conventional processing — online or offline.

The minicomputer-controlled 5300's are the fastest, most reliable COM systems on the market. They also feature the easiest job set-up and control of any available, wet or dry.

In addition, NCR offers a complete line of COM equipment and supplies through a worldwide sales and service network.

No matter the number of choices NCR gives you, wet or dry, online or offline, one thing remains constant: quality, whether with the industry's least expensive or most sophisticated COM systems.

Contact your local NCR Micrographic representative for details. Or call or write NCR Micrographic Systems Division, Box 606, Dayton, Ohio 45401. 1-800-543-8130 (in Ohio, 1-800-762-6517).

NCR
Micrographic Systems Division

Kodak Komstar microimage processor. The image of reliability.

Why have more major corporations installed Kodak Komstar microimage processors on-line than any other COM device?

Reliability.

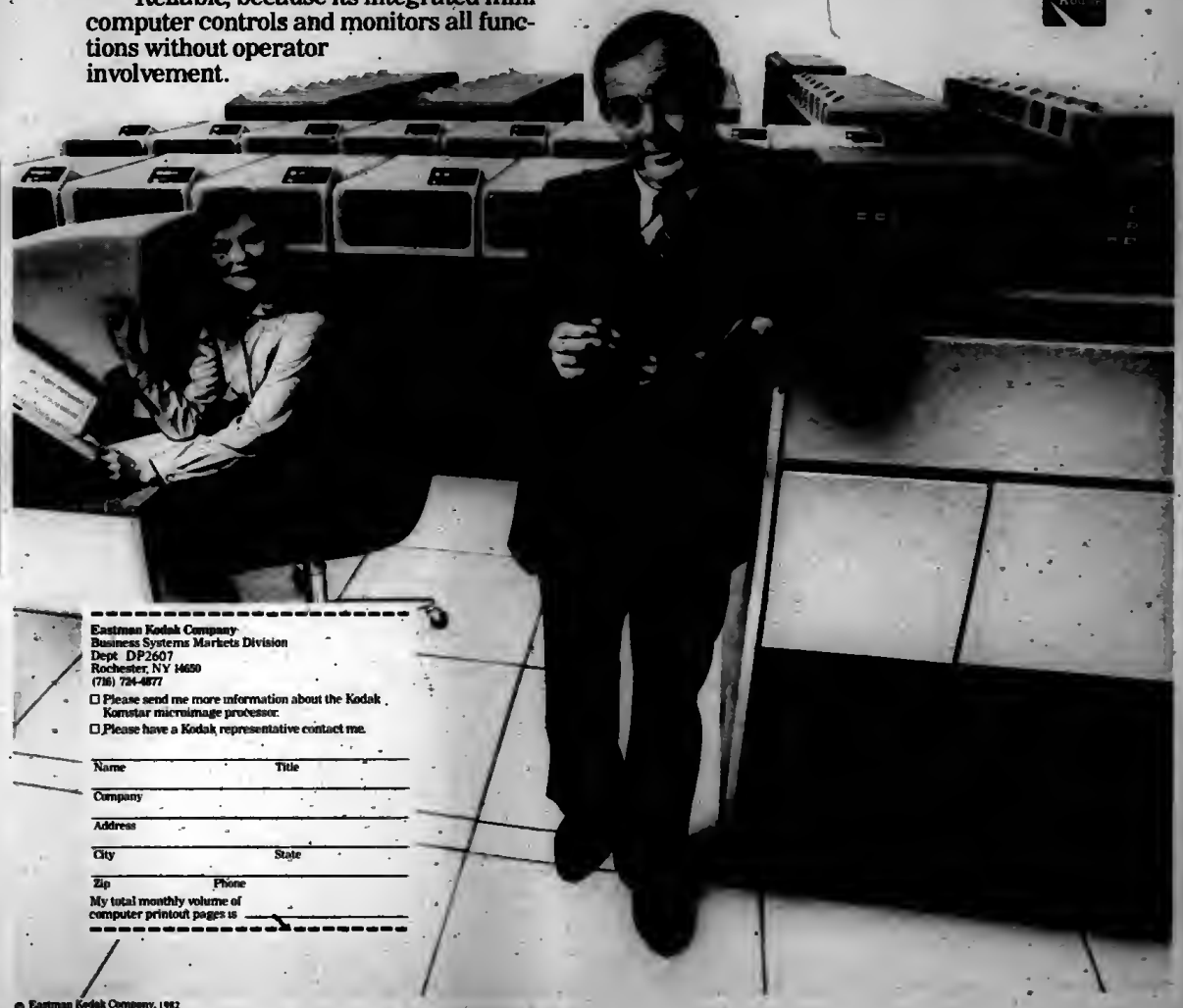
Reliable, because the Kodak Komstar microimage processor is an on-line COM that operates as a true computer peripheral.

Reliable, because its software performs all the necesary reformatting, initializing, and conversions of line-printer data to roll film or fiche at the touch of a button.

Reliable, because its integrated mini computer controls and monitors all functions without operator involvement.

And, reliable because a Kodak Komstar processor is up to six to eight times faster than an impact printer. That means you can print, duplicate, and package a 1000-page report in as little as 9 minutes.

To find out more about the reliable Kodak Komstar microimage processor and how it can save time and money in your DP operation, send the coupon. Better yet, ask your Kodak representative for a demonstration.



Eastman Kodak Company
Business Systems Markets Division
Dept DP2607
Rochester, NY 14650
(716) 724-4877

☐ Please send me more information about the Kodak Komstar microimage processor.

☐ Please have a Kodak representative contact me.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

Zip _____ Phone _____

My total monthly volume of computer printout pages is _____

© Eastman Kodak Company, 1982

VT100-$1495

Buy twelve ... get one free!

MTI's "baker's dozen" saves you a lot of bread.

Digital's VT100 has always been the best buy in video terminals with its most wanted features such as double-width/double-size characters, 80 and 132-column lines, detachable keyboard, smooth scrolling, split screen and composite video output. Now MTI makes it an even better buy by offering you a baker's dozen. Buy twelve VT100s from us at $1495 and we'll throw in the thirteenth one free.

MTI is one of the few Authorized Digital Terminals Distributors, so we can give you the best of two worlds; terminals, based on advanced technology from the industry leader, and the expertise and service from applications specialists.

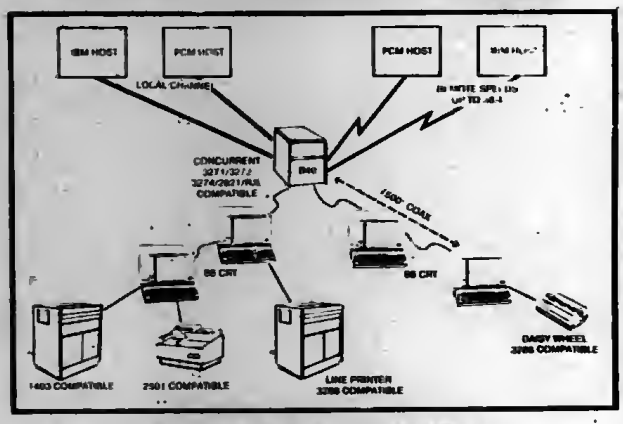
Whether you buy, rent or lease our equipment, you'll find MTI is the one source for all the terminals, peripherals, systems, applications expertise and service you'll ever need. At good prices. Call us today.

New York: 516/621-6200, 212/767-0677, 518/449-5959
Outside N.Y.S.: 800/645-6530
New Jersey: 201/227-5552
Ohio: 216/464-6688

mti

Applications Specialists & Distributors, New York, New Jersey and Ohio.
DEC, Intel, Lear Siegler, Texas Instruments, Dataproducts, Dualin, 3Com, Hazeltine, Racal-Vadic, Digital Engineering, MICOM, Cipher and Elgar.

3270 USERS
BRAEGEN = COMPATIBILITY **PLUS**



GET THESE IMPORTANT BENEFITS

- **MULTIPLE HOST ATTACHMENTS.** A single B40 controller can attach to several IBM 360/370's or IBM compatible CPU's. Mix Local and Remote attachments. Reduced number of controllers.
- **SWITCHABLE CRT's.** Each B6 operator can switch between available host attachments (again, mix locals and remotes). Switch between different IBM addresses on the same 360/370. Often, one Braegen B6 CRT can replace several 3270's.
- **SHARE CABLES.** Braegen CRT's (and printers, too) can share the same coax. You don't need a separate expensive coax cable for each B6 CRT. Just daisy chain new B6 CRT's to [illegible] coax.
- **LONG CABLES.** CRT's (printers, too) can be up to 7500 feet from the B40. Often, this lets you use local 3270's instead of remotes. Saves 370 software size, polling and you get faster response. Sometimes, this even saves you a separate controller.
- **BETTER I/O.** A wider range of speeds, and better print quality than you'll find elsewhere for 3286/3288 compatible printers. 1403 compatible printers and 2501 compatible card readers can be located up to 7500 feet outside the computer room thus eliminating all the special TP gear you have with RJE.

PLUS ...Low cost and fast delivery.

Customers throughout the U.S. are receiving these benefits today. For more information please contact
The BRAEGEN Corporation, 20740 Valley Green Drive, Cupertino, California 95014. (408) 253-4200

BRAEGEN 20740 Valley Green Drive Cupertino, California 95014 (408) 725 1252

Managers on the Move

Charles T. Kropac

CHARLES T. KROPAC has been named a vice-president of the accounting department and director of computer services of Doremus & Co., a subsidiary of BBDO International, Inc., headquartered in New York. Kropac has been responsible for implementing a customized accounting system for BBDO and establishing an office automation system, as well as developing a network of CRT terminals and printers throughout the agency and its branches.

Prior to joining Doremus in 1979, Kropac served as director of management information services at the Knickerbocker Toy Co., a division of Warner Communications. From 1963 to 1976, he served as manager of data processing and of management information services at Alpha Metals, the Climate Control Division of The Singer Co., Sportswear Industries, Inc. and J. Wiss & Sons Co., all located in New Jersey. He began his career in 1961 with the Fidelity Union Trust Co.

Kropac received a B.S. degree in management from Fairleigh Dickinson University.

•••

LLOYD W. BARNARD has assumed the post of executive director of management information systems (MIS) at the Universtiy of Southern California (USC) in Los Angeles. He will coordinste the computing activities of the university and will be responsible for several central information processing facilities that provide educational, research and administrative computing services to the USC community.

Barnard has more than 20 years' experience in both hardware and software. He began his career as an airborne computer technician in the U.S. Army. He has worked for Northrop Data Systems, Emerson Electric Co., Sperry Univac, Bendix Corp.'s Instrument Division and Manufacturers' Resources and Planning, inc. in 1980 he started a consulting firm, Technology Support, Inc., in Tustin, Calif., where he serves as president.

He holds a certificate from the USC Executive Program in Business Administration.

•••

JOHN SCHOFIELD has been promoted to director of the newly created Computer Services Division at the Argonne National Laboratory in Argonne, Ill. The division is operated for the U.S. Department of Energy by the University of Chicago and is responsible for planning and coordinating Argonne's entire system of computers and improving computing support for the scientifc and technical programs.

Schofield's promotion follows four years as associate director of the former Applied Mathematics Division, where he was responsible for managing the laboratory's Central Computing Facility.

Schofield came to Argonne in 1976, as a member of the computing center's User Services Group. In 1977, he was appointed project manager for Argonne's most recent large-scale computer acquisition and was promoted to computer scientist later that year. Previously, he was assistant director of the Kiewit Computation Center at Dartmouth College for two years, with responsibility for user services.

Schofield also taught full time at Bates College in Lewiston, Maine, for four years.

He received his master's degree in political science in 1967 from Johns Hopkins University and his MBA degree from the University of Chicago.

•••

THOMAS N. RUPERT JR. has been promoted to systems development manager in the Systems Development Division at Bethlehem Steel Corp.'s accounting department, headquartered in Bethlehem, Pa.

Prior to his promotion, Rupert served as a systems development consultant with the company. He began his career with Bethlehem Steel in 1964 as a systems analyst in the home office corporate data processing division, accounting. He was named senior systems analyst at the company's Burns Harbor plant in 1968 and was promoted to chief of systems and programming there in 1977.

in 1978, Rupert was named assistant manager, data processing services, at Bethlehem's Johnstown plant and appointed assistant superintendent of information services there in 1980. Later that year, he returned to the home office as systems development consultant.

Rupert received a B.S. degree in mathematics from Juniata College and has served as a guest lecturer in the College of Business Administration at Valparaiso University.

•••

EDWIN E. CRAIG has joined Sterling Drug, inc. as director of systems development in the company's corporate management information systems (MIS) department. He is responsible for management of systems development for corporate departments and, as requested, for groups and divisions, as well as coordination of long- and short-range development planning of data processing activities.

Craig comes to Sterling Drug from Citicorp, where he served as director of MIS and data base planning. Prior to that, he was manager of systems application development with Columbia Records.

He earned a B.A. degree in business administration from Rutgers University.

STRATUS VS. TANDEM

(Or how the hardware fault tolerant solution supersedes the software based solution.)

"If you drive down the cost of physical hardware, you can make typically redundant paths for less money. Not surprisingly, most redundancy breakthroughs that will occur happen in hardware rather than in software.

You can build a double computer inside one box for less dollars, as opposed to doing it in software, which continually needs maintenance and revision, as well as improvement."

by Aaron Goldberg
of IDC which
appeared in *Computerworld's*
December 28, 1981 issue.

STRATUS/32 – SYSTEM HIGHLIGHTS

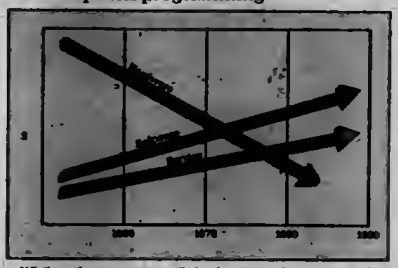
1. A simple hardware solution to fault tolerance that totally eliminates the need for extra application design and additional programming.
2. A design without performance penalties for fault tolerant operation – NO CHECKPOINTING!
3. A computer that pinpoints and isolates its failures, so repair is made quickly and inexpensively.
4. A system that can expand to 32 Fault Tolerant Processing Modules under a "single system image."

Now that the computer age is in full stride, 100% availability is fast changing from a luxury to a necessity. Downtime and its costs are unacceptable, especially when there is an alternative. Now that fault tolerant operation is becoming a universal requirement, there is demand for an improvement over the software approach used by Tandem. These computers must provide better performance, be easier to use, be easier to program and re-program, be less complicated and less expensive. We believe that the Stratus hardware based fault tolerant system answers these demands. Let us explain.

Why more hardware is better than more software.

The crux of the problem with software based systems is that they require complex, performance stealing software to provide fault tolerant operation. This software robs the system of precious resources because it uses processing cycles to pass status and checkpoint information back and forth between two computers. What's more, this passing of information can occur at four levels: operating system, user program, file management, and terminal control.

Stratus, meanwhile, has eliminated all this reliability software by having duplicate hardware components tightly coupled, dedicated to performing the same tasks at the same time. It's like having two computers in one, rather than two separate computers. Checking hardware logic detects errors with no performance loss and stops failing components instantly. The duplicate partner continues without interruption, unaffected by the failure. This is all transparent to the programmer and the user. With Stratus, there is no performance or data loss when there is a failure, no operator intervention, and no special programming.



While software costs will rise because they are people dependent, experts agree that hardware costs will continue to fall

Why Stratus is easier to implement.

The Stratus designer and programmer might as well be dealing with a conventional computer, one of them, not two.

Programmers are in a familiar environment. By providing industry standard languages, applications can be moved over without redesign or major re-programming. Fault tolerant operation is a bonus, not a complex effort.

Since there is no checkpointing with the Stratus hardware based solution, the applications designer and programmer is never concerned about overhead for fault tolerant operation. They view the system as a single computer; unconcerned that there are two computers running together.

$130,000 – Software included.

The Stratus concept could not have been executed 10 years ago, 5 years ago, or even 2 years ago. It is possible now because of the dramatic price drop of hardware components. Because of this lower cost of hardware, and because of the simplicity of its architecture, Stratus can offer Continuous Processing™ at a price competitive with traditional systems that don't offer this capability. A fully-duplexed configuration with 2 megabytes of memory, peripherals, and software can be purchased for under $130,000.

Don't overlook our software.

To complement our hardware approach to Continuous Processing we have an impressive list of software. For instance, Virtual Operating System (VOS), Transaction Processing Facility (TPF), Data Management System, CRT oriented command language, Cobol, Basic, PL/I, Fortran, Pascal, Networking using X 25, IBM Communications, full screen editor, symbolic debugger, forms designer and a complete Word Processing package.

If your application requires total reliability, if you are considering any kind of dual-processor configuration or if you're considering Tandem, then you should fill out our coupon or call Nick Bologna, Director of Product Marketing, 617/653-1466.

Stratus Computer, Inc. CW4
17 Strathmore Road, Natick, MA 01760

Name
Title
Company
Type of Business Phone
Address
City State Zip

Stratus
CONTINUOUS PROCESSING™

On Software Decision

Merlyn to Launch Symposia Series

ATLANTA — Merlyn Corp. will launch its 15-city series of Software Decision Symposia in Baltimore on Oct. 26. The series was designed to provide attendees with the knowledge necessary to evaluate and select software aimed at improving the application development process in the IBM mainframe environment.

Series 2 of the Software Decision Symposia is titled "Development Center/Information Center — Software Tools to Maximize Application Development Productivity." It has been structured into two separate one-day seminars, held back to back.

The first day will deal with development center products intended for the applications programmer. The second day will focus entirely upon the information center and the software tools intended for the end user.

The conference will feature a case-study approach along with videotaped product demonstrations. Each symposium runs from 9 a.m. to 4:30 p.m.

The cost per attendee is $325 for one day and $425 for both days. Limited discounts for early registration and multiple attendees from the same company are available.

Future sites for the symposia are New York, Pittsburgh, Pa., and Dallas (all in November); Houston, Denver and Calgary, Alta., (all in December); Los Angeles, San Francisco and Seattle (all in January); Newark, N.J.; Toronto, Boston and Chicago (all in February); and Atlanta (in March). Further information is available from Merlyn, Suite 419, 6075 Roswell Road, Atlanta, Ga. 30328.

ISI Conference Slated for Oct. 1 In Denver

PITTSBURGH, Pa. — Innovative Systems, Inc.'s (ISI) annual user group conference will be held Oct. 1 at the Marriott City Center Hotel in Denver.

It will include orientation sessions for first-time users, discussions of both research and development and product improvements and descriptions of new product directions.

The registration fee for an ISI user with a maintenance contract is $75. Without the maintenance contract the user fee is $150 for the first attendee and $125 for each additional attendee from the user site. The nonusers' registration fee is $250 for the first person and $225 for additional participants.

Further information is available from ISI, 341 Fourth Ave., Pittsburgh, Pa. 15222.

Sysed Course To Cover CICS Programs

NEW YORK — "CICS Command Level Programming," a five-day course, will be given Oct. 18-22 here by Sysed.

The course is aimed at programmers with experience in Cobol, PL/I or assembler language; previous exposure to CICS is not required. Attention will be given to on-line CICS concepts, including multitasking and reenterability, according to Sysed.

Registration for this program costs $650. Sysed is located at One Park Ave., New York, N.Y. 10016.

Cullinane Sets Meet Oct. 17

WESTWOOD, Mass. — Cullinane Database Systems, Inc.'s sixth annual domestic-user conference will be held this year at the San Francisco Hilton, Oct. 17-21. International User Week '82 has been planned for Nov. 14-18 at the Palace Hotel in Madrid, Spain.

Both user conferences combine education, product information and information exchange among users, the vendor noted, adding that 1,300 users and guests are expected to attend this year's domestic conference.

Both the domestic and international conferences carry a registration fee of $400 per attendee. Further information on the upcoming meetings can be obtained by contacting the User Week Department at Cullinane, 400 Blue Hill Drive, Westwood, Mass. 02090.

TO BECOME THE LEADER IN TERMINALS, TELEVIDEO HAD TO GIVE YOU MORE.

WE'RE STILL GIVING YOU MORE WITH OUR NEW SMALL BUSINESS COMPUTERS.

Mass. T/S Exposes $129 Million Welfare Fraud

By Susan Blakeney
CW Staff

BOSTON — When the Massachusetts Department of Public Welfare recently sent computer tapes containing welfare recipients' Social Security numbers to banks so they could run them against tapes listing client bank accounts, it uncovered one welfare recipient with $89,000 in the bank.

That was just one of hundreds of fraudulent Massachusetts welfare cases exposed in a report released Sept. 2 by the department. The people involved are estimated to have gleaned as much as $129 million in Massachusetts welfare, food stamp, Medicaid and general-assistance payments over the past few years.

The public-assistance recipients with too much money have been terminated by the welfare department and have had their bank accounts frozen by the state, according to Kermit Morrissey, director of external affairs for the Massachusetts Executive Office of Human Services. "People are already offering to pay back the money," Morrissey said.

The remaining cases have been turned over to the State Bureau of Special Fraud Investigation, which will prosecute the welfare violators if necessary.

State officials cross-referenced the Social Security numbers of more than 500,000 people through the time-shared computer system of 23 of the state's 1,013 banking institutions. They discovered that 613 welfare clients in various welfare programs had undisclosed assets totaling some $4 million.

Morrissey said the cross-check plan had been on the Human Services agenda for two years; the statute allowing such a check has been on the books since 1967. He explained that this expose was one in a series of matches, including one with tapes from the Registry of Motor Vehicles and other departments.

Tape-Match Plan

Harry Shea, the Department of Public Welfare's assistant commissioner for finance, said his group conceived of the computerized tape-match plan and brought it to the state's Bureau of Systems Operations, where the software was developed.

Shea's group mapped out the concept that included their requirements, reviewed the numerous banks' DP requirements and worked with the banks' general counsels to make certain everything was legal. The confidential information on the Department of Public Welfare's master files was not released, just social security numbers, Shea maintained.

The banks in turn ran the welfare tapes against their own and output a profile of findings for the Department of Public Welfare. The list that the department's IBM 3033 system then generated yielded the findings.

Shea called the initial findings "exciting," but went on to say, "We're hoping the big impact will be in the deterring end — we're talking about hundreds of millions of dollars . . . and we [in Massachusetts] happen to have the legislation to go after it."

Shea's department predicted that if this plan was implemented on a national basis, a conservatively projected savings of over $7 billion would result.

In three short years, TeleVideo became the number one independent supplier of CRT terminals in a very competitive marketplace.

We did it by designing and building terminals with more performance, reliability, features and functions than the competition.

But at a lower price.

Now TeleVideo has entered the even more competitive microcomputer marketplace. And we intend to repeat that success with the same basic philosophy:

By providing big system performance and features. And TeleSolutions — a hardware/software package that includes word processing and financial planning software programs.

For a price lower than many of the low performance personal computers.

TELEVIDEO'S TS 802 AND TS 802H. THE COMPUTERS THAT GIVE YOU MORE.

The TS 802 is TeleVideo's lowest priced computer.

Yet it gives you many more of the important features found only in larger computers costing much more.

- Like modular design for easier maintenance.
- High speed Z80A microprocessor with 64K bytes of RAM main memory — enough memory to handle most business applications.
- The CP/M operating system, which is included at no additional cost to give you access to more microcomputer software programs than any other operating system.
- An upward growth path through a unique multiple processor, building block architecture.
- Dual 5¼ inch double density diskettes with a million bytes of unformatted storage capacity.
- A high resolution, non-glare video screen with detached keyboard — just two examples of our innovative, ergonomic computer design.
- Two R232C serial ports for a printer *and* modem.
- And a high speed port for plug-in expansion to a larger multi-user, multi-tasking TeleVideo computer system.
- But suppose you need more storage. TeleVideo's next model up, the TS 802H, gives you all the same features of the TS 802. But instead of two floppy diskettes, it uses one floppy diskette and a 5¼-inch Winchester hard disk to give you 9.6 million bytes of unformatted storage capacity — nearly 10 times the storage for less than twice the price of the TS 802.

COMPUTERS THAT GROW AS YOUR NEEDS GROW.

The TS 802 and TS 802H are more than just single-user, stand alone computers.

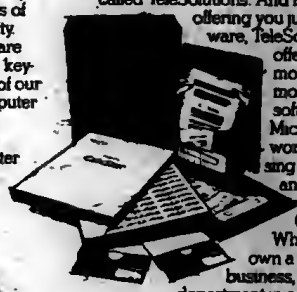
When it's time to expand, simply plug them into TeleVideo's more powerful TS 806 or TS 816 multi-user, multi-tasking systems. The TS 802s then become intelligent, fast response satellite stations.

And because each has its own CPU, there's none of the degradation of throughput and contention for a single CPU that slows down the typical shared system. Each user maintains full processing capability in a shared file environment.

With TeleVideo, there's no obsolescence. Because of the unique multi-CPU architecture and TeleVideo's multi-tasking software, the TS 802s do not have to be replaced as your data processing needs grow.

TELESOLUTIONS. THE SOFTWARE PACKAGE THAT GIVES YOU MORE.

Instead of offering you just a business microcomputer, TeleVideo is offering a computer and software package called TeleSolutions. And instead of offering you just any software, TeleSolutions™ offers you the most popular, most versatile software: MicroPro's® word processing WordStar™ and business planning CalcStar™. Whether you own a small business, manage a department in a company, or are your organization's DP manager, the combination of TeleVideo computers with WordStar and CalcStar gives you the quality text editing and financial planning help you'll need.



If you do require more software, our CP/M operating system allows you to choose from the widest variety of microprocessor software.

When you buy either the TS 802 at $3,495* or TS 802H at $5,995*, TeleVideo includes WordStar and CalcStar for a special price of $500 — a savings of nearly $300.

WORLDWIDE SERVICE.

TeleVideo's small business computers are serviced by TRW's nationwide service network, and by distributors around the world.

THE BETTER BUSINESS SOLUTION? PROVE IT TO YOURSELF.

Before you begin evaluating business computers make a list of what you'd like one to do for you. Then bring that list to one of TeleVideo's computer dealers throughout the world. Sit down at a TeleVideo® computer. Study the TeleSolutions Package. Even try another computer. Compare the features, the functions, and the performance.

And compare the price.

We don't think you'll find a better business solution than TeleVideo and TeleSolutions.

For details and the address of your local distributor call toll free 800-538-1780. And in California call 415-745-7760.

TeleVideo®

TeleVideo Systems, Inc.
Dept. #612D
1170 Morse Avenue
Sunnyvale, CA 94086

Please send details on TeleVideo computers and TeleSolutions to:

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
PHONE # (____) _____

TeleSolutions™ is a trademark of TeleVideo Systems, Inc. WordStar™ and CalcStar™ are trademarks of MicroPro International Corporation. CP/M is a registered trademark of Digital Research Inc. *Prices are suggested retail excluding applicable state and local taxes — Continental U.S.A., Alaska and Hawaii.

Northeast Region 617/369-9370, Eastern Region 212/308-0705, Southeast Region 404/447-1231, Midwest Region 312/989-0112, South Central Region 214/258-6776, Northwest Region 408/745-7760, Southwest Region 714/752-9488, European Sales (Holland) 31-075-26 7461

NEW LIFE FOR 1401 PROGRAMS

CS-TRAN converts your 1401 object programs to COBOL for the mainframe or mini of your choice.

CS-TRAN is the only translator that accepts your object programs, patches and all, yet allows you to include actual COBOL paragraph names and record definitions.

If you'd like more details about new life for your 1401 programs just call or write Russ Sandberg.

C-S Computer Systems Inc.
300 South Main Street, P.O. Box 386
Manville, NJ 08835 • 201-526-0000

Calendar

Oct. 11-13, Chicago — **Developing Computer-Based Marketing Information Systems.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Oct. 11-13, Boston — **Managerial Success.** Contact: Registrar, Control Data Management Institute, 6003 Executive Blvd., Rockville, Md. 20852.

Oct. 11-13, New York — **Supervisory Success.** Contact: Control Data Management Institute, 6003 Executive Blvd., Rockville, Md. 20852.

Oct. 12-14, St. Paul, Minn. — **Fifth Annual Midwest Telecommunications Conference.** Contact: Chuck Champine, 1660 S. Highway 100, Minneapolis, Minn. 55416.

Oct. 12-15, Washington, D.C. — **Focus Query Language for DP Personnel.** Contact: Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.

Oct. 13, New York — **Datacommunications.** Contact: Women in Data-Processing, Inc., Suite 2008, 310 Madison Ave., New York, N.Y. 10017.

Oct. 13-14, Dallas — **Semicon/Southwest.** Contact: Semiconductor Equipment and Materials Institute, Inc., Suite 212, 625 Ellis St., Mountain View, Calif. 94043.

Oct. 13-14, Jacksonville, Fla. — **Annual Jacksonville DPMA Exposition: Technology in Revue.** Contact: Fran Butler, P.O. Box 272, Jacksonville, Fla. 32202.

Oct. 13-15, Washington, D.C. — **Effective Data Systems Development.** Contact: Arnold Barnett, Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

Oct. 13-15, Cincinnati — **Forecasting Techniqnes for Decision Making.** Contact: Registrar, Control Data Management Institute, 6003 Executive Blvd., Rockville, Md. 20852.

Oct. 13-15, Arlington, Texas — **Data Base Concepts & Systems.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

Oct. 13-15, Philadelphia — **Structured Techniques for Systems Design.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

Oct. 13-15, St. Louis — **Structured Testing.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Oct. 13-15, Washington, D.C. — **Advanced Statistical Analysis System.** Contact: Registrar, Applied Technology Associates, Inc., Suite 1418, 1710 Goodridge Drive, McLean, Va. 22102.

Oct. 13-15, Los Angeles — **IMS/VS Message Format Services.** Contact: Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.

Oct. 13-15, San Francisco — **Data Communications: An Introdnction to Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 13-15, San Francisco — **Office Antomation: Concepts, Systems and Applications.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

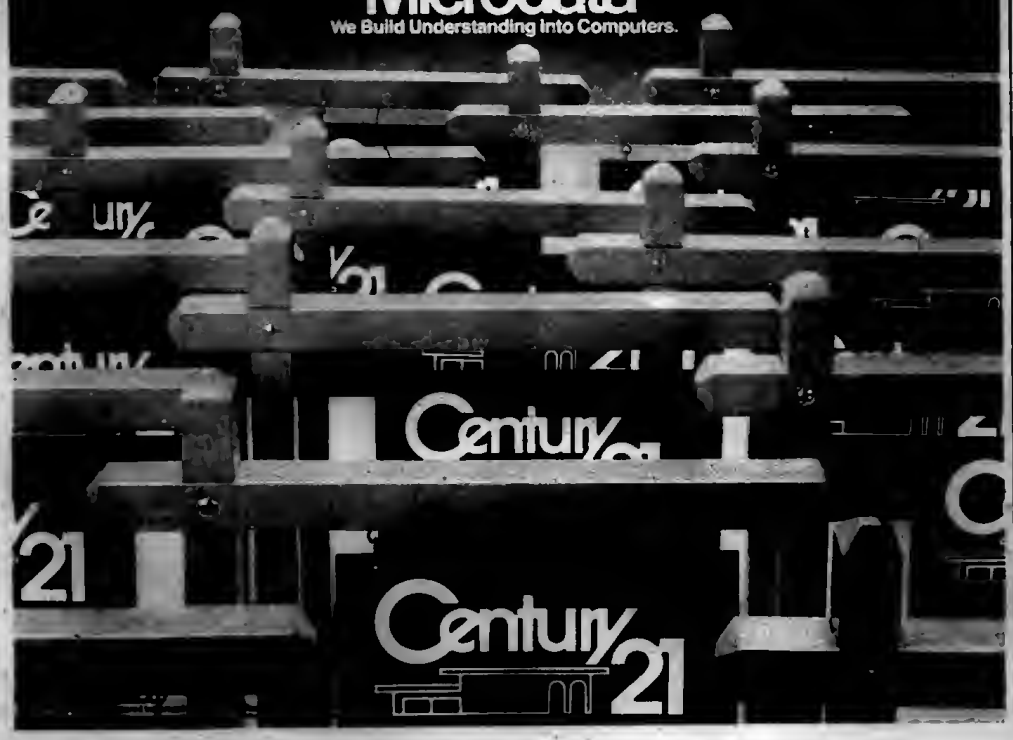
Oct. 13-15, San Francisco — **Microcomputer Systems: A Guide to Selection and Application.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 13-15, Chicago — **Computer Software Packages: Evaluation and Selection.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Oct. 13-15, Washington, D.C. — **Microcomputer Applications in the Design Office.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

"500,000 Real Estate Transactions Just Months After Installation— That's Reality!"

Microdata
We Build Understanding Into Computers.



SELLING TO EDP PROFESSIONALS?
BECOME A WOLFE COMPUTER SERVICES REPRESENTATIVE for
• World Famous Wolfe Tests
• Unique Software Packages
WE OFFER:
• High Commissions
• Growing Product Line
• High Level of Repeat Business
Call Toll Free or Write
WOLFE COMPUTER SERVICES
Box 319 Oradell, N.J. 07649
1-800-431-1953 Ext. 828

Genesys Makes Human Resources Software Easy.

Canned:
With canned software, or soup, you take what you get. It's prepackaged. And stays that way.

Custom:
With custom software, or soup, it's made from scratch to fit present requirements and tastes. Time consuming and expensive. And as needs or tastes change — you pay for the changes. Again and again.

Generated:
With generated software, or soup, the end product is developed in a modular fashion. The software is built from fully developed code modules, just as a savory shrimp chowder might start with a basic stock. Then all the necessary ingredients are added to suit the user's needs, or diner's palate. But since the final product is generated, it's open-ended. So when your needs change as time goes on, you can make all the changes you want — at no additional cost — because Genesys provides all the "ingredients" you'll ever need.

Just Think of it as Soup.

Genesys is the only generated applications software in the world. We offer three applications packages. Available separately. Or integrated into one Human Resources Management system that's the total solution to all your needs.

PAYROLL ACCOUNTING
PERSONNEL ADMINISTRATION
BENEFITS MANAGEMENT

Whatever your Human Resources Management needs, Genesys can handle them. From employee requests for information to management reporting. Including direct deposits, career development, eligibility/vesting schedules, and complete government compliance. Everything you'll ever need.

The sophistication of Genesys' generated software includes All-Screen™ and GENAIDS℠, making it the easiest software to use. Our user-oriented All-Screen is an on-line, terminal data entry and retrieval system with unlimited screen building capability. It lets non-data processing professionals enter data and receive information in exactly the format they want, at the touch of a button. And GENAIDS' mainframe-to-mainframe direct transmission system frees you from ever handling release notes and updates again.

Tastes change. So do Human Resources Management needs. That's why you need Genesys. Only Genesys is generated — modular and open-ended. So you can make changes easily.

If your company has over 400 employees, get Genesys. The Human Resources Management system you'll never can.

Genesys
10 Grafton St.,
Lawrence, MA 01843,
(617) 685-5400

Genesys

Genesys, 10 Grafton St., Lawrence, MA 01843 AG-1
Please send me your brochure on these Genesys packages:
☐ Payroll ☐ Personnel ☐ Benefits Management

Name_____ Title_____
Company_____ Telephone_____
Street_____
City_____ State_____ Zip_____
Hardware_____

EDITORIAL

A Pool of Potential Labor

Item: DPer demand red hot despite cool economy [CW, Sept. 13, 1982].

Item: DP managers see recruitment key problem in 1982 [CW, Dec. 28, 1981].

Item: Survey reveals half of DP departments understaffed [CW, April 30, 1981].

Even the casual *Computerworld* reader has been struck in recent years by the number of articles documenting the dearth of trained, competent DP personnel, a situation not expected to improve in the near future. Thus, the impending publication of a manual detailing ways to draw upon a vast and largely untapped pool of labor [CW, Sept. 13] should come as welcome news to DP managers.

The manual attempts to address the special steps that need to be taken in hiring what is, in fact, a special kind of worker: the physically handicapped individual. Covering a range of topics from interviewing deaf applicants to retrofitting the work space for handicapped personnel, the manual can help managers smash through the walls of ignorance that have kept millions of capable Americans on the outside of the job market looking in.

The question remains, however: Is management willing to hire the handicapped?

From certain indications, it seems that some of the larger DP shops, those perhaps most ravaged by DPer turnover and the lack of qualified replacements, are beginning to embrace the handicapped as an answer to part of their labor problems. For example, Manufacturers Hanover Trust Co. of New York claims to have invested heavily in promoting and training handicapped programmers. It was a Manufacturers documentation writer who developed the aforementioned hiring manual.

And companies like IBM, Control Data Corp. and Apple Computer, Inc., as well as manufacturers like Levi Strauss, have channeled DP-shop contracts to Disabled Programmers, Inc. This nonprofit organization in Campbell, Calif., trains the physically handicapped in basic programming skills, then turns their talents on specific corporate projects. The handicapped are then generally hired by the company that sponsored the project in the first place.

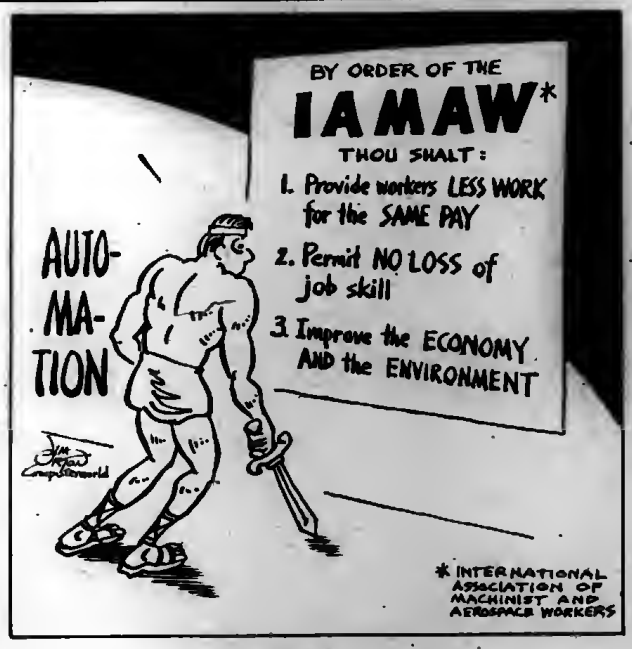
Advocates of hiring the handicapped take pride in pointing out that physically disabled workers represent one of the lowest turnover rates in DP shops.

Although it would be difficult to document, logic would dictate a handicapped worker is likely to perform at the best of his ability, once given the tools to do so. After all, an individual who's been effectively shut out of the work place can be expected to work that much harder once allowed on the job.

Hiring a handicapped DPer is also a way of ensuring compliance with existing federal Affirmative Action guidelines governing employment of the physically disabled.

And hiring a disabled DPer need not be a costly undertaking, despite popular beliefs to the contrary. Specialized DP workstation equipment is readily available, and sometimes it will be purchased by state or federal rehabilitation departments. Many buildings are already equipped with ramps and toilet facilities for the handicapped.

But most important, the handicapped represent a huge pool of potential labor (the federal government estimates there are about 16 million adults in the U.S. suffering serious physical handicaps). Given the current and projected state of affairs in the DP labor market, can prudent management afford to overlook the handicapped?



The Three Labors of Hercules

LETTERS

Problems With College DP

Nothing more true could be said about the quality of DP education in colleges today than what Evan Wride said in "MIS Exec Finds College DP Training Lagging" [CW, Aug. 9].

As a recent college student caught in the confusion of trying to earn a B.S. degree in computer science and work for a computer software company at the same time, I've experienced exactly what Wride has stated.

I attended Del Mar College in Corpus Christi, Texas, for two years where an excellent computer science curriculum is taught. Most of my DP professors were actually free-lance consultants and put a heavy emphasis on business applications. This quality training made it possible for me to get a good part-time job with a software company as a junior programmer writing programs for small IBM systems.

However, when I went on to Corpus Christi State University (CCSU) to complete my degree, I found they had a completely different theory on how computer science should be taught. A computer science degree could be earned in either business or scientific programming. I chose the business route and found a heavier emphasis on machine architecture than on management or business.

Through the two years I attended CCSU, I became more and more discouraged with its curriculum. Because I was working in the industry at the time, I realized that a lot of the ideas they were trying to teach were not used in the real world.

I've been out of college for two years now, working as a programmer, and doing pretty well for myself so far. But I still don't have my degree, and I feel I'm going to need it if I'm going to advance much further.

I sincerely hope that these colleges will realize that employers want programmers who know more about how business works than about how the internals of the computer work.

James D. Godsey
Programmer/Analyst
Grant Corp.
Houston, Texas

Fitting a Market Niche

Recently, there have been a lot of articles pertaining to the demise of mainframes and/or minicomputers.

Minicomputers, mainframes and micros all fit a market niche. From my perspective, the mainframe's niche is very large data bases, with turnaround time not being a major consideration. Typically, these systems were not designed for end-user interaction.

The minicomputer's niche is for large data bases with a heavy emphasis on on-line processing. These systems have typically been designed so that the end user can handle the system easily. Turnaround time is reduced because a minicomputer does not handle the large data bases that mainframes handle.

Microcomputers fill the niche for the end user who requires quick turnaround of information (possibly on-line) using a small data base. The microcomputer has given the end user the ability to operate and control his own computer system. The implications of this are far-reaching. Now a relatively unsophisticated user can control his own data processing environment.

Once again, the data processing community and hardware companies are attempting to manipulate the user community into believing something that is not true — the demise of any one of the three types of computer systems mentioned above.

Kenneth R. Leebow
Marietta, Ga.

COMPUTERWORLD

. . . the one weekly newspaper that's designed to fulfill your unique "need to know" . . . the one newspaper that can give you all the current information you need to benefit you, your organization and your career progress . . . 52 weeks of incisive news, commentary and special reports . . . subscribe today, use the attached postage paid order form.

☐ Please enter my subscription
(details on back)

☐ I'm already a subscriber, but I'd like you to change my:
- ☐ address
- ☐ title
- ☐ industry
- ☐ other

My current mailing label is attached and I've filled in new information on the other side

Put old label or label information here

Please send me COMPUTERWORLD for one year. **RATES: United States $44; Canada, Central & South America $110; Europe $165; All Other Countries $245 (Airmail Service)**

☐ Check Enclosed
☐ Am Ex ☐ BA/Visa ☐ MC

(MC Only - List four digits above your name)

If charge we must have cardholder's signature _____ Expiration Date _____

First Initial	Middle Initial	Surname	
Your Title			
Company Name			
Address			
City		State	Zip Code

Address shown is
☐ Business
☐ Home

☐ Check here if you do not wish to receive promotional mail from *Computerworld*

☐ Check here if you're interested in receiving information on *Computerworld*'s Index

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY

BUSINESS/INDUSTRY

10 Manufacturer of Computer or DP Hardware/Peripherals
20 Manufacturer (other)
30 DP Service Bureau/Software/Planning/Consulting
40 Public Utility/Communication Systems/Transportation
50 Wholesale/Retail Trade
60 Finance/Insurance/Real Estate
70 Mining/Construction/Petroleum/Refining
75 Business Service (except DP)
80 Education/Medicine/Law
85 Government - Federal/State/Local
90 Printing/Publishing/Other Communication Service
95 Other _____

TITLE/OCCUPATION/FUNCTION

11 President/Owner/Partner/General Manager
12 VP/Assistant VP
13 Treasurer/Controller/Finance Officer
21 Director/Manager of Operation/Planning/Administrative Service
22 Director/Manager/Supervisor DP/MIS Srvs
23 Systems Manager/Systems Analyst
31 Manager/Supervisor Programming
32 Programmer/Methods Analyst
41 Application Engineer
42 Other Engineering
51 Mfg Sales Representative
52 Other Sales/Marketing
60 Consultant
70 Lawyer/Accountant
80 Librarian/Educator/Student
90 Other _____

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

CIRCULATION DEPT. 375 Cochituate Road, Rte. 30, Box 897, Framingham, MA 01701-9985

Detach here, fold, and place in post-paid envelope attached through binding.

GETTING AHEAD IN DP / Donald J. Berardo

What to Do If You Suspect Drugs on the Job

Lately, one of your employees — we'll call him Tim — has been acting odd. He drifts off in meetings and seems spacey in your conversations with him.

Other times, he seems euphoric and laughs at even commonplace remarks. You notice that his eyes are often red and his pupils dilated. You suspect drugs.

What would you do?

First, as always, take a moment to consider the situation. DP is highly stressful and that causes many DPers to look for an escape, a way of relieving the pressure.

Some choose hobbies or sports or civic activities and some, inevitably, choose drugs.

'Such people aren't necessarily "bad." Even if you have a strong aversion to drugs, you shouldn't fly off the handle and persecute the employee for your subjective prejudices. You must plan a course of action as a manager, not as a combination of judge, jury and executioner.

'Let's assume that you have developed a decent relationship with Tim, that he respects you as a manager and you respect him as a professional DPer. Then have a private conference with him and confront him with your concerns.

'Work your way into the subject by remarking that he hasn't been with it lately and hasn't quite seemed himself. Point out a few examples.'

'Bad' People?

Such people aren't necessarily "bad." Even if you have a strong aversion to drugs, you shouldn't fly off the handle and persecute the employee for your subjective prejudices. You must plan a course of action as a manager, not as a combination of judge, jury and executioner.

Let's assume that you have developed a decent relationship with Tim, that he respects you as a manager and you respect him as a professional DPer. Then have a private conference with him and confront him with your concerns.

Work your way into the subject by remarking that he hasn't been with it lately and hasn't quite seemed himself. Point out a few examples.

First, ask about other health-related causes (allergies, anxiety, medications and so on). Then say that you have reason to believe he has gotten into drugs, if no other cause seems feasible.

When High Is Low

This may elicit an admission or only silence. In either case, the next steps are the same.

Explain that you don't care what he does on his own time and that you don't intend to make a big deal of your concerns just yet — but that it is your responsibility to talk to him about them.

Remind him that it's against company policy and a cause for dismissal. A couple of warnings are also in order. Tell him he is risking his health and his career.

If his alertness and productivity slacken, he will move very slowly along his career path and perhaps get knocked off the path altogether. Point out that getting high may eventually leave him low.

If the employee admits he has been using drugs and that he's not controlling his problem as well as he should be, recommend that he get professional assistance.

Some companies offer such services or he may prefer to see an outside professional.

In your conversation with him, remember that drugs are a symptom, not a cause of trouble, although drugs themselves can become the major problem if they get out of hand.

It's not your job to confront the true causes directly, and you may choose not to for two reasons: You lack the professional expertise, and you don't want him to become overly dependent on you.

Job-Related Causes

However, you should make it clear that the employee can talk to you about job-related problems. Ask him if he's unhappy with his duties, his career development and so on. Listen carefully to his answers and offer possible solutions.

By following this plan, you accomplish three things: You make the employee aware of your concerns, which should be an impetus for change; you put the responsibility for change squarely where it belongs — on the employee; and you perform your job as the representative of authority.

Remember these pointers:

- Understand that drugs are an escape.
- Suppress your personal feelings.
- Confront the employee.
- Warn of the dangers to health and career.
- Offer your help.

Berardo is a management counselor and career therapist.

He is a vice-president with the Meld Group in West Hartford, Conn., publishers of a monthly newsletter on management development.

HUMAN CONNECTION / Jack Stone

Terminal Operators Are Professionals, Too

The inattention of most supervisors to the adjustment problems of terminal operators is another example of missed opportunities by management to build an organization of motivated employees.

If the administration of experienced DPers in the typical data center can be — and frequently is — described as bleak, ill-begotten and fragmented, the handling of terminal operators can be characterized as callous and desultory, if not inhumane.

From the way they are treated, the majority of operators feel they are part of a fifth-generation version of an "untouchable" caste, seemingly assigned to wallow forever in a career-development trough at least until, after much psychological anguish, they learn to accept their repressed state, recognize the remoteness of growth possibilities and courageously quit for a better job.

'From the way they are treated, the majority of operators feel they are part of a fifth-generation version of an "untouchable" caste, seemingly assigned to wallow forever in a career-development trough at least until, after much psychological anguish, they learn to accept their state of repression and courageously quit for a better job.'

Undeserving of Concern?

The majority of managers and supervisors perceive operators as clerical/secretarial types who deserve no more of their concern than a typist-trainee.

Never mind that these operators represent the bulk outflow of data processing salaries and a significant portion of overall systems costs, even though they are paid the lowest rates.

Don't worry that the accuracy of the input data and, hence, the quality of operational data bases, relies heavily on their positive attitudes, continuing cooperation and, without intending to be iconoclastic, *their* professionalism.

Ignore the fact that system responsiveness is, in large measure, attributed to expert operator performance during data retrieval sessions. And forget that terminal operators have immediate access to highly confidential and proprietary data and that only their loyalty to the firm and a personal code of ethics prevents the unauthorized — and potentially disastrous — distribution of information.

So, to encourage more deliberate thought on personnel development programs for operator trainees, I'm going to offer some common sense ideas for such programs, starting from the time a trainee faces the first few days on the job.

New operators come on board riddled with emotional crosscurrents that result from self-questioning:

"Do I have the mental ability to deal with the machinery?" "Can I compete successfully with the other new employees?" "Will I be able to understand technical manuals?" "Will the company truly come through with what they promised in the way of training when I feel I need it?" "Is the firm's business recession-proof or will I be the first to go in a layoff?"

Needless to say, they are in a highly vulnerable state and, being at the bottom of the heap, particularly susceptible to influential events during this initial period.

In-Depth Briefing

Therefore, in addition to the conventional indoctrination supplied by the personnel department, an in-depth briefing on the operational systems, plus related support, preferably by the immediate supervisor, would be helpful.

These topics might be helpful:

- Commentary on the successful achievements of predecessor trainees to help build confidence.
- A plan for long-range training. Topics covered in formal classroom sessions and the types of activities and/or projects undertaken during on-the-job-training should be included, along with the designation of an on-the-job-training monitor.
- A discussion of the overall systems concepts and the role played by the terminal operator as part of the systems team.

A demonstration of specific terminal operations is provided, along with the names and functions of individuals responsible for inputs and outputs.

- The assignment of a trained coworker as a "buddy" to work informally with the trainee on a day-by-day basis, not only to help resolve operating problems, but also to provide a necessary link to the local social scene and minimize the feelings of isolation that so often plague the new trainee.

This is the third article in a six-part series, "Trials of a New Terminal Operator," coauthored with Joanne Barker.

Letters to Stone should be addressed to him at Box 270, 1377 K St. N.W., Washington, D.C. 20005.

IBM
DOS & OS USERS:
MAXIMUM
SECURITY FOR CICS.

If you're shopping for a CICS security package because you're concerned with preventing unauthorized access to your CICS files, take a look at Boole & Babbage's SECURE/CICS. It's the most advanced and reliable CICS security software package on the market today, complete with the latest features and capabilities of CICS/VS.

CICS resources can easily be misused, accidentally or intentionally, resulting in disclosure or loss of sensitive information. SECURE/CICS controls access by individual operator and terminal, and also restricts the use of sensitive system and application transactions, programs, and files according to their degree of sensitivity.

SECURE/CICS provides the control and flexibility you need to tailor security to the needs of your installation. And SECURE/CICS is the CICS security product that enables you to maintain and update your CICS security online in both a DOS and OS environment.

See for yourself how much better we are. Call the toll-free number and free yourself from CICS security worries.

Call (800) 22 Boole or write
Parkway, Sunnyvale, Ca 94086

SECURE/CICS
Another Harder Working Software Product From
Boole & Babbage

VMLIB

A Library Control System For CMS

- Supports multiple users.
- Offers control and synchronization of source data from development through production.
- Saves space by keeping a base module plus updates.
- Prevents duplication through tracking usage by program and user.
- Provides complete auditability of changes to source code.

Features
- Requires no modifications to install.
- Provides complete audit trail.
- Stores data in compressed format.
- Includes cross-reference of COPY/INCLUDE members.
- Provides comprehensive reports with history and status of source members.
- Handles programs, EXECs, JCL or any source data.
- Offers optional automatic job or EXEC submission to other virtual or real machines.
- Provides security on program, user, or function basis.

Name _____
Title _____
Company _____
Address _____
City, State _____ Zip _____
CPU _____ Phone _____

VM Software Inc.
P.O. Box 666 • Vienna, Va. 22180
• (703) 621-6666

LETTERS

Familiar But True Facts

In the editorial "Don't Quote Me" [CW, Aug. 9], I found some familiar but unfortunately true facts. I do not mind being quoted on this matter.

In 25 years of DP experience (at all levels of management) I have never found a consultant for an accounting firm (Big Eight or not) that could or would perform an accurate or ethical consulting engagement for a client. In fact, the term engagement is a very accurate description of what is done, for a firm involved in one of these transactions can well be assured of a long marriage.

I have several friends who left Big Eight firms where they were consultants. Their reasons ranged from their problems with unethical practice to unspoken policies of "creeping involvement" in which one Big Eight actually used consulting engagements to take over and control business.

I would like to make the accounting firms in our country a deal. I'll stop practicing accounting if they will stop practicing data processing.

John D. Ferguson
Director, Information Systems & Services
St. Meinrad Archabbey and
The Abbey Press
St. Meinrad, Ind.

Roles of CPA Firms

I would like to offer a rebuttal to the editorial "Don't Quote Me" [CW, Aug. 9]. Perhaps some clarification of the roles of a certified public accountant firm would increase general understanding of the issues:

- A major role of CPA firms is, quite obviously, participation in financial audits of our clients. In this capacity, we are charged with reviewing internal controls and providing general business advice. We have a fiduciary responsibility also to communicate significant weaknesses in internal control.
- Another major role of CPA firms is consulting services. These services encompass a variety of disciplines, among them data processing. Data processing consulting (as differentiated from DP auditing) is conducted by DP professionals.

The editorial alluded to problems created by mixing auditing and DP consulting. The only "problem" this would create is the sharing of information between the two organizations, thus allowing both to make recommendations based on more complete data.

Another fallacy of the editorial, arrived at by inference, is that the changes that occurred as a result of the Big Eight consultants' recommendations were not appropriate. In fact, they might very well have served the best interests of the organizations involved — even if they did cost a few individuals their jobs.

One final point: If the consultants of a Big Eight CPA (or any independant consultant) ignored incompetence, they would be very poor business advisers.

If a consultant of a Big Eight ignores incompetence that affects internal controls, they violate their fiduciary responsibilities to the owners and creditors of the firm.

Daniel L. Roberts
Manager
Data Systems Consulting
Ernst & Whinney
San Francisco, Calif.

Cause for Concern?

The quotes that were cited in the editorial "Don't Quote Me" [CW, Aug. 9] implied that all DP personnel should be worried if their companies hire consultants/DP auditors.

When management calls in consultants, it is paying for advice that it believes it doesn't have at its disposal. When it receives that advice, only management can decide how to react. If it reacts to incorrect advice without checking it, that is the fault of management.

However, experienced DP auditors are often uniquely willing and able to explain clearly to management what is happening in the DP area, what are the consequences and what are some possible solutions.

Some DP managers do not like being told that they are no longer going to be able to run the only department permitted to take double the budgeted time and cost to produce a company asset, that they will have to explain to users the consequences of the various options that they have available, that they must prevent their programmers from operating the computer or using excessive amounts of computer time for playing games, that they must have offsite backup for their programs, files and documentation or that passwords should not be taped to terminals.

If it can be shown that the consultants' suggestions are impractical, then management should not adopt them. The only time that DP managers should fear consultants is if they know that the consultants can explain a situation to management that they have either been unwilling or incapable of explaining.

Robert Box
Computer Audit Manager
Price Waterhouse
Hong Kong

Consulting and Clients

"Don't Quote Me" [CW, Aug. 9] was interesting reading, but it didn't do justice to the Big Eight consulting firms, their clients or the facts. Some consultants recommend organizational changes, but rarely perform the "hatchet" jobs quoted in the editorial. Nothing can be done without the client's involvement. There is also a temptation for the client to "credit" the consultant for any unpleasant decision.

In my job, I have contact with hundreds of consultants in firms of every size. I have found the majority of them to be hard-working people, dedicated to client service. The Big Eight firms are also aware that consulting has an impact on their firms' audit clients as well.

George R. Kendle
NCR Consultant Relations
NCR Corp.
Dayton, Ohio

WE COULD CHARGE AS MUCH AS WE WANT FOR A FULL-COLOR GRAPHICS SYSTEM AS ADVANCED AS THIS.

High resolution 19" monitor displays 16.8 million colors, 256 at a time in a 768H x 575V window

Self-contained 5-1/4" .5 MByte floppy disk drive for data transportability and back-up

Self contained 5-1/4" 10.4 MByte Winchester drive for mass storage

Detachable VT100-style keyboard with built-in joystick

Anti-aliasing feature of the graphics processor smoothes out the "jaggies" typical of raster graphics – contained within the hardware and software, requiring no processing by the host computer

12 user-optional Q-BUS slots powered and wired for a broad choice of peripherals and additional memory

LSI-11/23 CPU with 512K bytes memory features 22-bit memory addressing (expandable to 4MBytes), thousands of field-proven applications and upward compatibility with PDP-11 and VAX

1024 x 1024 x 8 planes of color graphics memory, ideally suited for printed circuit and VLSI design as well as other CAD applications and 3D modeling

BUT UNTIL SEPTEMBER 30th, $24,800 IS AS MUCH AS WE WANT.

Finally, there's a full-color graphics workstation that's a good deal. A good deal more capable and a good deal less expensive.

Introducing the AEDS11 desktop system. It comes complete with a sharp 19" screen; detachable keyboard, and slim 7" chassis containing an LSI-11/23 CPU and both a 5¼" Winchester and a floppy disk drive. And 16.8 million colors generated by the internal graphics processor. It's the most powerful yet compact system available. Ever.

The AEDS11 desktop system puts precision color control and full microcomputer processing in a price range nobody else has ever come close to. Even with systems offering considerably less.

At our standard price of $31,000, it's easily the industry's price/performance leader. But at our introductory price of just $24,800, good only until September 30, for delivery in 1982, it's an incredibly good deal more at an incredibly good deal less. (Optional operating systems software available for an additional charge.)

So call any regional sales office listed below, or Mike Thorpe in our Sunnyvale corporate office at (800) 538-1730 before September 30th and get the biggest discount in color graphics.

ADVANCED ELECTRONICS DESIGN, INC.

440 Potrero Ave. Sunnyvale, CA 94086, (408) 733-3555 Telex 357-498

New England (617) 256-1700 • Los Angeles (213) 592-4469 • New York (201) 238-6322 • Detroit (313) 352-4290 • Washington D.C. (301) 760-4310 • Houston (713) 688-0700 • Chicago (312) 565-1718 • Atlanta (404) 973-1758 • Denver (800) 538-1730

SAS for DOS/VSE...

French DBMS For IBM Users Introduced To U.S. Mart

LOS ANGELES — A data base management system that is being used by more than 200 European firms with IBM or plug-compatible systems has been introduced to the U.S. market.

Clio was developed by Syseca, a French software firm, and is being marketed in the U.S. by United Software Systems and Services Corp.

The package is said to include a free-form, English-based data definition language that allows a user to define any type of relationship — including hierarchies, networks and relational — that are implemented using specific built-in functions. It also includes a non-procedural data-manipulation language (DML) designed to allow queries as well as on-line or batch additions, deletions or updates of any data element or relation.

The vendor said that users can interactively extend or modify the data base by adding or deleting fields or relations. The data base reportedly can be restructured without affecting the query programs written with the DML.

Clio features a host-language interface that is used with programming languages such as Cobol, PL/I, Fortran, assembler and so forth.

According to the vendor, this interface can be tailored to replace directly existing I/O program commands.

Other features include the ability to create what the vendor calls a "smart-user language." This basically employs the vocabulary and

(Continued on Page 32)

Internal Security Becoming Necessary For Users in DOS/VSE Environment

By Paul Cornelison
Special to CW‡

A computer security system consists of more than protecting a computer against physical damage resulting from outside or external forces such as guns, rocks or bombs.

External security can be accomplished through the application of locks and alarms or by putting a computer and its peripheral gear in an inconspicuous location.

People generally have a clear understanding of this type of security. However, they are less clear on the protection of the computer's internal resources, such as data files and programs. As this internal security is accomplished by the computer itself, it becomes an overhead function for the operating system.

IBM's 4300 series of computers, in conjunction with the DOS/VSE operating system, has made it possible for many more users to have access to data previously denied them by design limitations of smaller systems.

Because of this fact, many users of the DOS/VSE operating system are considering internal security for the first time. Some of these users are emerging from the ranks of smaller IBM systems. Others are entering the DOS/VSE arena from non-IBM environments. Managers of environments such as these must consider internal protection against accidental or deliberate destruction of and/or access to valuable or sensitive information.

Security and control systems have been integrated by design into VM and MVS operating systems. Gaps in security have remained for software vendors to fill with various products. Safeguards ranging from standard label tapes to multiple password systems have been available and are quite effective when used correctly. Most of these safeguards were not built into DOS originally (Figure 1), and many of those gaps that ex-

(Continued on Page 30)

Unlike Data Can Be Tied Using 'Cupid'

MINNEAPOLIS — A software package designed to concatenate unlike data sets, linking them together in a series or chain, has been announced by Control Data Corp. for use on IBM systems under MVS.

Called Cupid, the product reportedly allows users to combine unlike data sets residing on different types of storage devices such as IBM 3330-, 3350- and 3380-type disk units, ½-in. tape and mass storage devices and to process the data sets as if they had similar characteristics.

Cupid can be used for disk-to-disk conversions, disk and tape access, migration or backup to tape and generation data group processing, CDC said.

Cupid is available for immediate delivery and is priced at $4,000 for a fully paid license. Maintenance service is offered for $450/year. CDC can be reached at P.O. Box O, Minneapolis, Minn. 55440.

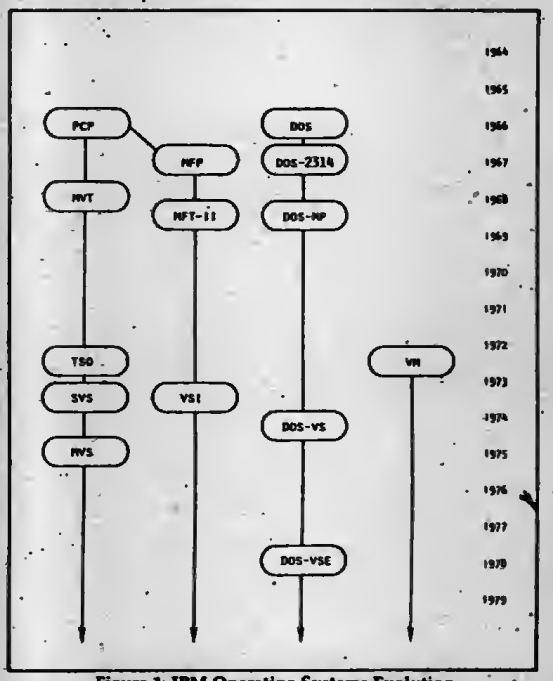


Figure 1: IBM Operating Systems Evolution

Tired of 4am wake-up calls? Plagued with nagging reruns?

CA-DRIVER is the job management system that lets you be in two places at once.... asleep in bed at 4am, and at your desk making critical decisions about the jobs on third shift.

AND NOW . . . Release 2.0 features the following enhancements:

- An interface with CA-DYNAM/T catalog to allow tape mount messages prior to job execution;
- Full screen online update retrieval of the CA-DRIVER job control library.

CA-DRIVER: puts the "Language" in Job Control Language

Computer Associates announces Release 2.0

CA-DRIVER™

for DOS/VS(E) users

COMPUTER ASSOCIATES

COMPUTER ASSOCIATES INTERNATIONAL, INC.

Mail This Coupon

☐ YES PLEASE SEND FREE INFORMATION ON CA-DRIVER.

NAME ____
TITLE ____
COMPANY ____
ADDRESS ____
CITY ____ STATE ____ ZIP ____
PHONE ____ CPU ____ OPSYS ____

Call Toll Free: 800-645-3003
In New York call 516-333-6700

COMPUTER ASSOCIATES INTERNATIONAL, INC.
125 Jericho Tpke, Jericho, NY 11753

Internal Security Seen Necessary for DOS/VSE

(Continued from Page 29)

isted then still exist today.

It is still relatively easy (compared with MVS) for a good technician without authorization to modify, delete or destroy records, files and volume table of contents (Vtoc). A majority of technicians have not had the tendency toward that kind of nefarious activity, which is a major reason DOS has existed for many years without the integrity that a comprehensive security system provides. However, with the occasional bad employee and with auditors reminding managers of the possibility of disastrous results, a well-designed security control system is no less important for DOS/VSE users than it is for MVS users.

Because of the rapidly growing number of DOS/VSE users, more and more security control systems are being developed for these users. These must control access to sensitive data files as well as to the computer and its resources in the following ways:

- Jobs should not be allowed to wait in the input queue until it is time for them to be executed without having first passed a test of acceptance exercised at log-on or read-in time.
- These jobs should be examined for authorization when the job or job-stream is read into the system. If a job cannot pass the acceptance criterion at read-in time, it should be purged from the system immediately. A record of this event in the form of a permanent log record should be made and, indeed, a log record of any and all such events of this nature should be standing procedure.
- A security system should also exercise control over events that could happen internally and log them for later reference. For example, job input classes could be controlled and monitored even though this function would most likely fall into the non-security aspect of the general security and control system.
- Within a teleprocessing environment, transaction response time can be greatly increased because of the internal verification process required of any security system. Therefore, it is necessary for the design of a real-time security system to be predicated to the use of core storage, as opposed to the design of a batch security system that may or may not rely heavily on the relatively slow speed of auxiliary devices. This is another factor that should be taken into consideration by DOS/VSE installation managers when selecting a system.

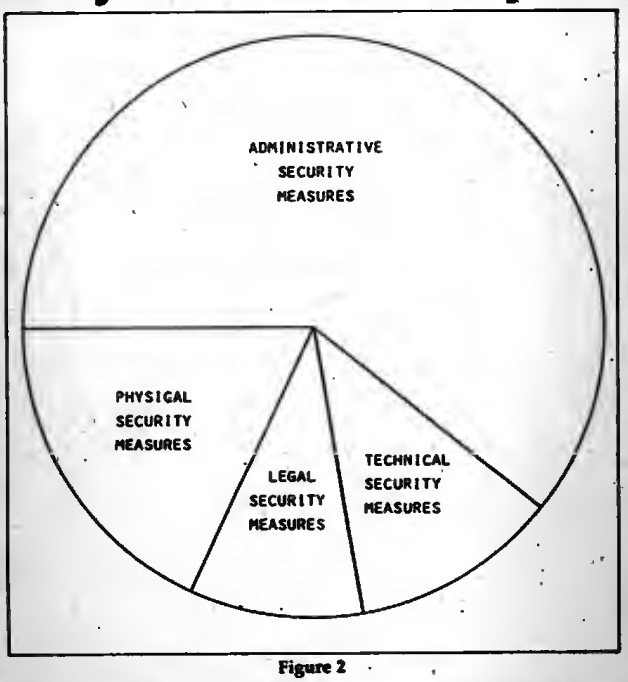


Figure 2

There are very few conceptually unique factors that apply to the DOS/VSE operating system. Most, if not all, aspects apply concommitantly across all operating systems and environments. The fact that most DOS/VSE installations are smaller than most MVS and VM installations does not negate the need for a security control system in view of the fact that more potential security breaches exist internally in DOS/VSE.

Good solutions to computer security problems usually require a mix of technological, administrative, legal and physical measures. This mix is determined by the sensitivity of the information to be protected, the threats against it and the available budget (Figure 2).

Cornelison is a consultant with Just Technical Associates of Dallas, Texas.

VMBACKUPSM

USER RESULTS: "My backups dropped from 32 hours per week to 4 hours."

VMBACKUP will:
- save personnel time by offering and user file restore capability
- save time & tapes by dumping only data that has changed yielding up to 90% savings in time and tape
- save disk space with Optional end user archiving system.

VMBACKUP Highlights:
- Keeps VM available continuously
- No modifications to install
- Cataloging of minidisks, files, and tapes
- Incremental backup
- End user restore option
- Support for CMS & non-CMS minidisks
- Packing, encryption & chargeback
- Standard label tapes

VMTAPESM

USER RESULTS: "In only one hour VMTAPE changed my tape situation from total chaos to total control."

VMTAPE will:
- manage tape volumes & tape drives
- save data from being clobbered inadvertently by offering standard label tape support
- save operator time by transferring decisions to VMTAPE
- interface optionally to OS/VS tape system.

VMTAPE Highlights:
- No modifications to install
- Interface to MVS or VS1 tape manager
- Services multiple mounts concurrently
- Supports both interactive and CMS BATCH users
- Comprehensive data security facilities
- Extensive expiration date support

VM Software Inc., P.O. Box 985 • Vienna, Va. 22180 • (703) 821-6886

☐ Send information on VMBACKUP.
☐ Send information on VMTAPE for my VM - only machine
☐ Send information on VMTAPE with OS/VS interface. My OS/VS tape manager is _____

Name _____
Title _____
Company _____
Address _____
City, State _____ Zip _____
CPU _____ Phone _____

Join the computer bulk-sales boom in Europe with *Computer Business Europe*.

Recent IDC research reports indicate a six-fold growth in the bulk-sales (multiple unit) market in Europe between 1980 and 1986. Users are looking for a one-stop supplier of computer equipment and will be spending over $6 billion through business systems houses by 1986. Total shipments will increase almost five-fold by units and nearly four-fold by revenue value over the next five years.

Computer Business Europe will put you in touch with 12,000 carefully researched, key decision-makers with bulk-buying responsibility in the United Kingdom and Europe. Published monthly, it covers important topics and the latest developments and trends for buyers and sellers in the computer business.

Bonus circulation of Computer Business Europe's November issue will be distributed at Comdex Europe in Amsterdam, The Netherlands, November 8-11, 1982.

Don't miss this opportunity to reach the right people in this booming marketplace.

CW International Marketing Services gives you one-stop advertising service in countries around the world. For more information about *Computer Business Europe*, just fill out the coupon below.

Diana La Muraglia, Manager
International Marketing Services
CW COMMUNICATIONS/INC.
375 Cochituate Road, Box 880, Framingham, MA 01701
(617) 879-0700

Please send me more information on
( ) *Computer Business Europe*

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____

CW COMMUNICATIONS/INC.
375 Cochituate Road, Box 880, Framingham, MA 01701
(617) 879-0700

Publishers of Computerworld and other leading computer publications around the world.

MANTIS
CINCOM'S POWERFUL 4th GENERATION LANGUAGE...

SETS NEW PERFORMANCE STANDARDS IN APPLICATION DEVELOPMENT TECHNOLOGY.

MANTIS is the most powerful application development system ever offered.

The power of MANTIS comes from its unique 4th Generation Language, combining the flexibility of modern procedural languages and the power of interpretive systems.

Procedural: MANTIS is procedural, providing the flexibility to solve even the most complex types of applications in a logical, straight-forward manner.

Interpretive: MANTIS is interpretive, thus eliminating the frustrating delays of multiple compile steps which can stop productivity in its tracks. And MANTIS' processing efficiency compares favorably to COBOL due to its advanced interpretive parser.

Complete Application Development: MANTIS provides complete beginning-to-end on-line application development tools. They include:

- Free-form interactive screen design
- Conversational file design and allocation
- Logical data views
- Conversational programming with MANTIS' 4th Generation Language
- On-line documentation
- Computer aided instruction facilities
- Directory listings (maintenance is automatic through the library system)
- Master terminal security controls
- Menu driven operation
- Independence to access any existing files or data bases
- On-line hard copy
- Dynamic screen attribute modification
- Full set of batch utilities
- High level Cincom DBMS and VSAM file support.

MANTIS' unique design enables programmers to use the most contemporary development techniques such as top down design, step level refinement, structured coding and prototyping.

In the past 12 months, more than 400 companies worldwide have chosen the power of MANTIS to improve their application development performance. New levels of performance never before achieved.

Procedural, Interpretive, Powerful, Successful. This is MANTIS—the 4th Generation Language—the complete application development system.

But, the only way to appreciate the power of MANTIS is to see it in action. To arrange a demonstration, contact our Marketing Services Department.

800-543-3010 In Ohio: 513-661-6000
In Canada: 416-279-4220

Cincom Systems
2300 Montana Ave. Cincinnati, OH 45211

NOW THAT YOU'VE LOOKED AT IBM'S DOS/VSE,

Maybe It's Time To Look At A Cooperative Operating System:

DOS/MVT/VSE.

SYSTEM SOFTWARE FOR IBM DOS SYSTEMS

SOFTWARE PURSUITS

444 Market Street Suite 800 San Francisco, Calif. 94111 (415) 392-7171

CSI Aid Lets 'Task/Master' Run Under IBM's CICS/VS

BOALSBURG, Pa. — Conversion Systems, Inc. (CSI) has announced software that allows Turnkey Systems, Inc.'s Task/Master to run under CICS/VS on IBM processors in DOS/VS(E) and OS/VS environments.

The Task/Master to CICS/VS Interface (TCI) package reportedly facilitates the conversion of Task/Master Version 1 or II teleprocessing monitor applications to IBM's CICS/VS teleprocessing monitor. TCI does not require any source code conversion or recompilation of existing applications programs, according to the vendor.

In addition, the transparent software system reportedly does not restrict the user's applications language, file structure or communications access method, assuming CICS/VS support for the facility exists.

Installation time for TCI is approximately two hours, according to CSI. The cost of the DOS version is $22,500, and the OS version costs $25,000. Further details are available from CSI through P.O. Box 223, Boalsburg, Pa. 16827.

'Top Secret' Enhanced For IBM's MVS

MARLBORO, N.J. — CGA Computer Associates, Inc. has announced a series of enhancements to its Top Secret security package for systems running under IBM's MVS operating system. Features of Top Secret Version 2.0 include extended support for IBM's CICS to files, journals, destinations and temporary storage.

In addition, the package reportedly has been modified to allow processing modes to operate on a facility basis. For example, IBM's TSO can operate in a fail mode, while CICS is operating in a warn mode.

The package also has been modified to provide greater flexibility in both administration and reporting functions, a CGA Computer spokesman said.

The package uses IBM's MVS Security Interface. Modification to MVS, IBM's Job Entry Subsystem, IMS data base management system or CICS is not necessary, according to CGA.

Top Secret Version 2.0 costs $700/mo. For multiple CPU sites, additional packages are available for $350/mo.

CGA Computer Associates is located at 255 Cannon Hill Farm, Marlboro, N.J. 07746.

Clio DBMS Debuts in U.S.

(Continued from Page 29)

syntax of a user's organization. Also incorporated into Clio are security procedures down to the field level, recovery procedures that are said to allow both warm and cold restarts and a storage technique called virtual space designed to minimize simultaneously disk accesses and optimize storage allocation with automatic and dynamic data compaction.

Clio versions currently are available for users of IBM and plug-compatible systems running under OS, OS-VS1, OS/MVS, VM/CMS, DOS and DOS/VS(E). Its price ranges from $60,000 to $80,000, according to United Software. The software is said to require 128K bytes for program compilation and 64K bytes for execution, plus 6K bytes for each on-line direct user.

United Software Systems and Services Corp. is located at Suite 1136, 1801 Ave. of the Stars, Los Angeles, Calif. 90067.

Need Accounts Receivable? Need Order Entry?

300 user-years have taught us a lot about customer service software

Let's talk!

Customer Service Software is not financial software—order entry is not like payroll; accounts receivable is not like general ledger. Quite simply, Customer Service Software helps you be much more responsive than your competition to customer needs and at the same time improve your collection efforts and cash flow. Isn't that what being in business is all about?

Computeristics has successful installations in large corporations like Standard Oil (Indiana), as well as in dynamic growth companies like Ocean Spray Cranberries. But do ask for our complete reference list, not just a couple of showcase accounts.

If your mainframe is IBM 370 compatible, let's talk about our CustomAR and CustomORDER systems.

Call us now, while you're still thinking about it.

(203) 288-2834

Come See Us! SOFTWARE EXPO BOOTH 215 Chicago Sept. 21-23

Name/Title

Company

Address

City State Zip

Computer (make, model, operating system, TP monitor, file access)

Telephone

CW-9/20/82

Mail to: Michael Mettler, Computeristics, Inc. 2 Skiff Street Hamden, CT 06514

computeristics®, inc.

The customer service software people

MRPS

"CINCOM'S MANUFACTURING CONTROL SYSTEM— WORKS AS WELL FOR MANUFACTURING AS IT DOES FOR DATA PROCESSING."

Today's successful implementations of manufacturing control software have two things in common:

1. They work as hard for manufacturing in reducing inventories, improving on-time deliveries and profit margins as they do for data processing in being powerful, adaptable, extendable and flexible to the changing needs of manufacturing.
2. They are based on Cincom's MRPS, the comprehensive production and inventory control software system that is modular, integrated and flexible.

Designed by Cincom's R&D teams along with a number of the manufacturing industry's premier consultants, Cincom's Manufacturing Resource Planning System (MRPS) is the first of the next generation of manufacturing control systems. A generation that works as well for manufacturing as it does for data processing. Cincom's MRPS is the first manufacturing control system that is:

- Designed to adapt to change in manufacturing operations
- Modular, yet integrated, for phased implementation
- Integrated with a DBMS to ensure data independence and high performance
- Hardware/software independent and portable from mainframes to minicomputers
- Designed exclusively for an on-line environment.

As the first manufacturing control system to be designed, built and proven in actual use in the last decade, Cincom's MRPS combines the most recent manufacturing MRP principles with the most contemporary data processing methodologies.

The System is comprised of five powerful modules. The Foundation Module establishes the system framework and the information base. The four planning modules include: MMPS—Manufacturing Material Planning System; MPSS—Master Production Scheduling System; PPCS—Production Planning and Control System; and VAPS—Vendor Analysis and Purchasing Systems.

With this fully integrated system, manufacturers are realizing performance results that no other system can match. Results that include:

- Inventory levels reduced 30%
- Overtime cut by 55%
- Inbound freight charges reduced 30%
- Indirect labor productivity improved 30%
- Inventory accuracy increased to 95%
- On-time delivery improved to 99%
- Overdue purchase orders reduced 44%

Using MRPS, your company too can look forward to lower investments in inventories, timely customer service, and more efficient production. All of which adds up to greater customer satisfaction and higher profitability.

Cincom's MRPS, it's the manufacturing control system that allows manufacturing and data processing to work as a successful team. And it's fully integrated with Cincom's complete line of DB/DC and directory driven information software.

For our full-color booklet on how MRPS can become a major step in optimizing your manufacturing environment, contact our Marketing Services Department:

800-543-3010

IN OHIO: 513-661-6000 IN CANADA: 416-279-4220

Clearly the leader in data base and software technology.

Cincom Systems

2300 Montana Ave. Cincinnati, OH 45211

THE COMMODORE 64. ONLY $595.

"THE COMMODORE 64 COULD BE THE MICROCOMPUTER INDUSTRY'S OUTSTANDING NEW PRODUCT INTRODUCTION SINCE THE BIRTH OF THIS INDUSTRY."

–SHEARSON/AMERICAN EXPRESS

They're speaking to a group as interested as anyone else in the future of computers: the people who buy stock in the companies that make computers.

If, on the other hand, you're a person whose livelihood depends on a personal computer—or whose leisure time revolves around one—what follows should impress you even more than it impresses investors.

MIGHT MAKES RIGHT.

The value of a computer is determined by what it can do. What it can do is largely determined by its memory.

The Commodore 64's basic RAM is 64K. This amount of power is unusual enough in a micro at any price.

At $595, it is astonishing.

Compared with the Apple II+®, for instance, the Commodore 64™ offers 33% more power at considerably less than 50% of the cost.

Compared with anything else, it's even more impressive.

PILE ON THE PERIPHERALS.

Because the basic cost of the 64 is so low, you can afford to buy more peripherals for it. Like disk drives, printers, and a telephone modem that's priced at around $100.

This means you can own the 64, disk drive, printer and modem for a little more than an Apple II+ computer alone.

HARD FACTS ABOUT SOFTWARE.

The Commodore 64 will have a broad range of custom software packages including an electronic spreadsheet; business graphics (including printout); a user-definable diary/calendar; word processing; mailing lists, and more.

With BASIC as its primary language, it is also PET BASIC compatible.

The Commodore 64 will also be programmable in UCSD PASCAL, PILOT and LOGO.

And, with the added CP/M® option, you will have access to hundreds of exciting software packages.

THE FUN SIDE OF POWER.

The Commodore 64 can become very playful at a moment's notice.

You can use Commodore's plug-in game cartridges or invent your own diversions. All will be enhanced by brilliant video quality (320 x 200 pixels, 16 available colors, 3D Sprite graphics), plus outstanding sound.

The 64's built-in music synthesizer has a programmable ADSR (attack, decay, sustain, release) envelope, 3 voices (each with a 9-octave range) and 4 waveforms. All of which you can hear through your audio system and see in full color as you compose or play back.

NOW'S YOUR CHANCE.

If you've been waiting for the "computer revolution," consider it as having arrived.

Through its 25 years of existence, Commodore has been committed to delivering better products at lower prices.

Today, the company's vertical integration has resulted in the Commodore 64's price performance breakthrough heralded by Shearson/American Express.

Visit a Commodore Computer dealer and discover the 64 soon.

It will expand your mind without deflating your wallet.

*CP/M® is a registered trademark of Digital Research, Inc.

Commodore Business Machines/Personal Systems Division
P.O. Box 500 Conshohocken, Pennsylvania 19428

Please send me more information on the Commodore 64.

Name_____

Company_____

Address_____

City_____ State_____

Zip_____ Phone_____

commodore COMPUTER

CW5811

CPMS®-CICS SPOOL DISPLAY & PRINT

NEW
- Automatic & selective report printing
- Standard FCB Forms Control
- Route reports to any CICS printer
  - Reduces need for RJE and couriers
- Display batch reports on CICS 3270s
  - Reduces printing costs
- VSI, MVS, CICS/VS, JES I, JES II
  - No modifications to SCPs or appls.

Site license under $5,000 until Nov. 30, 1982

H & W Computer Systems, Inc.
P.O. Box 4173
Boise, Idaho 83704 • (208) 377-0336

CICS Users Get Print Tool Update

TORRANCE, Calif. — Data 21, Inc. has announced Release 2.2.15 of its Remote Print Facility for users of IBM's DOS/VS(E) operating system with CICS.

The package supports IBM's 3270 Model 5 terminals for on-line report display. With this support, CICS end users can display reports (from the VSE/Power program product) as an on-line inquiry.

The feature reportedly provides faster information turnaround and cuts the cost of paper operations, the vendor said.

The package costs $4,200 for a one-time license fee. Data 21, Inc. is located at 19110 Van Ness Ave., Torrance, Calif. 90501.

'Omnibase' Price Unbundled For Components

GOLETA, Ca. — Signal Technology, Inc., the developer of Omnibase, a relational data base management system for Digital Equipment Corp. VAX processors using the VMS operating system, has unbundled the purchase price for components of the software package.

Omnibase software runs on all VMS systems, Version 2.5 and above. The package contains three major components:

- The Frontender, a set of front-end tools that is said to support session logging, user buffer editing with arbitrary choice of VAX editor, an on-line help facility and a user command definition facility.
- The Reporter, an interactive report writer facility that reportedly allows for very general formatting of outputs without compilation or execution.
- The Parser, a section of software that translates user queries into elementary sets of back-end processor commands. The Parser also formats the final output to the user, the vendor said.

The packages interface with the Omnibase processor, which consists of the Britton Lee, Inc. IDM-500 or IDM-200 relational data base machine and an IEEE-488 protocol.

The Britton Lee package can be purchased directly from the developer or as part of an Omnibase package, according to a Signal Technology spokesman. Omnibase packages cost between $25,000 and $30,000 depending on modules selected. Signal Technology is located at 5951 Encina Road, Goleta, Calif. 93117.

Disk Utility Bows for NCR

PACHECO, Calif. — A disk compression utility for NCR Corp. mainframe users that is said to address disk fragmentation and space management problems of active data bases has been announced by Century Analysis, Inc.

Disc/8 provides a method of providing contiguous pack file resolution and ensures that all available space on a disk pack is utilized in a productive manner, a Century Analysis spokesman claimed.

The utility compresses the data stored on the disk pack by stepping through the disk directory and copying a file at a time until all files have been relocated and all unused disk fragments have been eliminated, the vendor said.

The utility consists of a set of software and services that includes magnetic tape containing the Disc/8 software and full documentation, as well as full customer support. It can be used on any NCR Criterion system running under the B1, B2, B3, B4 or VRX operating systems. NCR 656, 657, 658, 6530, 6540 and 6550 disk drives are also supported, the company said.

The Disk/8 package is priced at $3,500 and is available from Century Analysis, Inc., 114 Center Ave., Pacheco, Calif. 94553.

IBM claims they have the software to reduce your backlog via THE INFORMATION CENTER and THE DEVELOPMENT CENTER.

Bull?

You've wondered about IBM's claims for its software – and the claims of the many independent software suppliers. And yet you can't afford to ignore the challenge of mounting backlogs, and the pressure to better serve your users.

But how can you afford the time to examine all the available tools and techniques, cut through the marketing dazzle, and determine which products, if any, can help you stay ahead of the game?

Software Decision Symposium – Series 2
an independent in-depth analysis

Conveniently structured into two separate days, back to back, with either day optional, the symposium provides you with the most productive opportunity to find out what you really need to know about "development center" and "information center" products.

Day 1 looks at application generators and development software aimed at increasing the productivity of programmers.

Day 2 looks at query languages, analysis tools and report writers for use by end users in an Information Center environment. Depending upon your area of interest, you can attend either or both days.

Here's what the symposium offers:

- With an independent, unbiased look at the major products, including IBM's, you will save weeks of evaluation time and avoid the headaches and costs involved with having to live with the wrong products.
- Through an analysis of the limitations, drawbacks, and trade-offs associated with each product you will eliminate unpleasant surprises and disappointments later on.
- By understanding all the key issues and evaluation criteria you will save time with an organized approach to subsequent product evaluation and selection.
- With guidelines for successful product implementation, you will be able to keep control of the environment and satisfy security concerns.

And this is a proven answer:
Here are just a few of the glowing reports our Series 1 Symposium received:

1. "Of tremendous value to hear one unbiased person familiar with all the products in that area. This seminar gave us the opportunity view products without all the marketing promises clouding the issue. It also provided valuable information on evaluation methods for this type of package."
   Chris Mooney, E-Systems
2. "Essential education for any CICS user concerned about increasing applications development productivity. The seminar focused attention on those issues to be resolved, and the questions that should be asked before deciding on any particular package. It was clear, concise, concentrated, and saved us weeks of evaluation."
   Al Moliengo, Crouse-Hinds, Arrow Hart Division
3. "Very informative and professionally presented. Vaughan Merlyn's novel, unbiased approach gave us a great deal of useful product information we couldn't have gotten from the vendors."
   Ed Michael
   Shawnee County, Kansas

In short, the Software Decision Symposium presents a remarkable opportunity for today's DP manager to quickly find out which software claims can be believed. And which are Bull.

To register:
To register, or to get more information, call collect (404) 252-0516. Price per person if attending one day only is $325. If attending both days the price is just $495. If more than one attendee registers from the same company, the second and subsequent registrants receive a 30% discount. Early registrations (at least 4 weeks prior to a symposium) receive a 10% discount. The fee, which must be paid in advance, includes symposium workbooks, all meeting materials, lunches, coffee breaks and a cocktail reception at the end of the first day.

Schedule

Baltimore	October 26 27
New York	November 3 4
Pittsburgh	November 9 10
Dallas	November 17 18
Houston	December 1 2
Denver	December 6 9
Calgary	December 14 15
Los Angeles	January 12 13
San Francisco	January 19 20
Seattle	January 25 26
Newark	February 1 2
Toronto	February 6 9
Boston	February 15 16
Chicago	February 23 24
Atlanta	March 1 2

MERLYN

Merlyn Corporation
6075 Roswell Rd./Atlanta, GA 30328
(404) 252-0516

'Xmenu' Targets New Users Of IBM 3270 Terminals

SAN JOSE, Calif. — A menu system has been developed here by Kolinar Enterprises, Inc. for users of IBM 3270 CRT terminals with little or no programming experience.

Information display, menu selection and data entry screens are reportedly made easy to develop by the Xmenu system. It creates displays that can be used by applications programs written in high-level languages or assembler.

These applications call Xmenu subroutines to display menus on the screen, accept data from input fields, write data to output fields, change visual attributes and control function keys, according to the vendor.

Xmenu is said to be installed with no system modifications and may be licensed yearly for $1,300 for the CMS version and $2,600 for the MVS version.

Further details are available from Kolinar at Suite 64, 50 W. Brokaw Road, San Jose, Calif. 95110.

UCC Updates 'APS' Package

DALLAS — University Computing Co. (UCC) has announced Release 1.2 of its Accounts Payable Systems (APS). The on-line system handles accounts payable from origination of purchase orders through check reconciliation.

Major enhancements contained in the release include full on-line inquiry capability for purchase order and accounts payable information and concurrent processing that allows users to continue running CICS while performing batch processing transactions, the company said.

UCC APS runs on IBM DOS and OS systems, as well as Burroughs Corp. mainframes; and is written in Cobol. Standard are a purchase order control reporting function; check writing and reconciliation; three-way matching of invoice, purchase order and receiver information; and duplicate invoice screening. The package includes a CRT-HELP function which allows a user to reformat the screen.

Purchase price begins at $37,000 from UCC, UCC Tower, Exchange Park, Dallas, Texas 75235.

Software Polls NCR Terminals

RICHARDSON, Texas — Southwest Modular Systems, Inc. has announced software said to poll NCR Corp. 2140 and 2950 point-of-sale (POS) terminals and other devices using an IBM Series/1 computer.

Pollnet was written for the retail industry and reportedly provides unattended polling operations of up to 8,000 remote POS registers.

The base charge for Pollnet is $7,500. Installation and modification fees range from $2,000 to $6,000, depending on the POS terminal's internal software, a Southwest spokesman said from Suite 103, 731 Lingco Drive, Richardson, Texas 75081.

Spreadsheet Fits DEC Business Minis

SALT LAKE CITY — Datatrend has released an electronic spreadsheet software package for use on Digital Equipment Corp. RT-11-based minicomputers.

Datacalc reportedly can be used to create forecasts and budgets, projected income statements and balance sheets, depreciation and amortization schedules, consolidations, cost charts and numerous other spreadsheet applications.

This product sells for $895, and Datatrend is located at Suite 346, 1363 S. State, Salt Lake City, Utah 84115.

CONVERSION

are you . . . • Emulating / Simulating? • Consolidating? • Changing Computers?

If your program logic is still useful, there is no need to go through the expense and inconvenience of a rewrite or redesign. With Dataware's Software conversion services experience you will save time, money and manpower. Dataware, Inc., is the leader in the conversion area and the only company that offers a full line of conversion software and services. Listed below are eight Dataware Translators most often needed.

- COBOL to COBOL
- AUTOCODER/SPS to COBOL
- EASYCODER/TRAN to COBOL
- BAL/ALC to COBOL
- OOS/ALC to OS/ALC
- PL/1 to COBOL
- RPG/RPG II to COBOL
- RPG/RPG II to PL/1

In addition to Translators, Dataware has Utility Packages that are useful in a conversion environment. Two of the most widely used are:

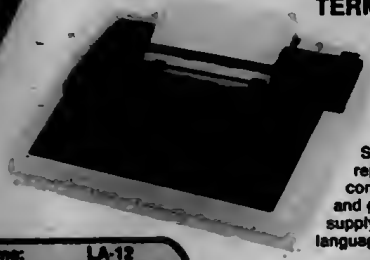
• FILECOMP • TEXT COMPARATOR

Facing a conversion situation? Call or write today!

Dataware, Inc.
The Conversion Software People
2505 Elmwood Avenue, Buffalo, NY 14217 • (716) 876-5722 • TELEX 91510

NATIONAL COMPUTER
Communications Corp
The Greatest Name in Terminals

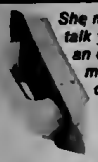
IS PROUD TO ANNOUNCE THE
LA-12 CORRESPONDENT
PORTABLE TERMINAL



This baby prints on ANY paper available, from multi-part forms to hotel stationery. She can print a 132 column report on 8½" x 11" paper by condensing print. She can print charts and graphs and has a universal power supply and character sets for ten languages.

Name: LA-12 CORRESPONDENT
Weight: 20 lbs.
Size: 18.3"W x 5.7"H x 16.5"D
Speed: 180 CPS
Other DEC products available:
VT-100, VT-101, VT-131, VT-18X, LA-36, LA-120 VT-52, LA-180
LSI & PDP Computers

She hasn't got much of a wardrobe, but comes in her own soft carrying case.



She may not talk yet, but has an optional integral modem and/or coupler

STOP BY AND SEE HER AND HAVE A CIGAR ON US!

IF YOU WANT TO KNOW MORE ABOUT OUR BABY
CALL 800-243-9006
(in CT call 357-0004)
P.O. Box 602
Stamford, CT 06904

Atlanta 404-634-0530 New Jersey 201-843-3900
Boston 617-444-6622 New York City 212-354-6666
Cincinnati 513-683-2500 Philadelphia 609-665-6240
Chicago 312-298-0830

*Trademark of Digital Equipment Corp.

NATIONAL COMPUTER
Communications Corp
The Greatest Name in Terminals

Version 2 Of 'Cognac' Fits Prime

TUCSON, Ariz. — Apex Data Systems has announced a new release of its Consolidated Group Insurance & Claims System (Cognac) that reportedly includes improved documentation and flexibility.

Cognac runs on all Prime, Inc. computer systems and is said to provide both claims adjudication and administration functions. The vendor said Version 2 includes enhancements in throughput efficiency of operation, documentation and increased flexibility, allowing "cafeteria-style" benefits selection. Cognac is written in Cobol, utilizes a relational data base structure and processes totally on-line, the company said.

The administration functions and claims adjudication functions cost $150,000 each if purchased separately, or $250,000 as a package. Object code only is available for a $75,000 down payment with monthly fees starting at 55 cent/employee, or for a $150,000 down payment with monthly fees starting at 15 cent/employee. The software also is available on a time-sharing basis, prices starting at $1.50/employee from Apex at 6464 E. Grant Road, Tucson, Ariz. 85715.

Enhanced 'Writer' Suits System/34

KIRKLAND, Wash. — Applied Data Processing has announced an enhanced version of its Applied Letter Writer software package, which reportedly operates as a word processor on the IBM System/34.

The software provides customer cross-referencing and selection through an unlimited set of classifications, according to the company.

The software is priced at $450, including a customer file conversion program, from Applied Data Processing, 10939 N.E. 49th St., Kirkland, Wash. 98033.

Modeling Package Targets DEC, Prime, DG Minis

COLUMBUS, Ohio — The Supercomp-Twenty financial modeling package from Solveware Systems, Inc. is now available for minicomputers from Digital Equipment Corp. and Prime Computer, Inc., in addition to Data General, Inc.

The package handles operational budgeting, financial planning, decision support and long-term strategic planning, according to Solveware. It can accommodate multiple simultaneous users, both simple and complex financial and business models, and data can be extracted from current data bases and interfaced to it.

Supercomp-Twenty ranges in price from $1200 to $4800. Solveware is at 2109 Stella Court, Columbus, Ohio 43215.

Access Spreadsheet Debuts For Use With Prime CPUs

SOUTH NATICK, Mass. — Access Technology, Inc. has announced a spreadsheet modeling package for Prime Computer, Inc. computers.

Supercomp-Twenty offers flexible screen formatting to customize reports, data import/export to communicate with other software packages, command files to automate procedures, on-line HELP and 25 special purpose functions.

The Prime version of the software runs under Prime's Primos and Software Tools. Supercomp-Twenty is also available on Digital Equipment Corp. VAX-11, PDP-11 and Bell Laboratories, Inc. Unix-based computers. The price for the Prime version is $4,800 from the vendor at 6 Pleasant St., South Natick, Mass. 01760.

'Fisc-ol' Models, Analyzes Salary Budgets

ANN ARBOR, Mich. — Fisc-ol, a computerized system for modeling and analyzing salary budgets, has been released by Comshare, Inc.

Fisc-ol was designed to help human resource departments plan salary budgets, according to the company. It allows a company to forecast each employee's next salary increase based on new or existing pay scales and increase guidelines. The company can then predict how much its salary expenditures will be and whether the firm is within its proposed budget for the next year, a Comshare spokesman said.

Companies can also determine their competitive position in the marketplace and how much they must spend in salaries to stay in line with the rest of the business community, the spokesman noted.

Fisc-ol is available on a time-sharing basis from Comshare and is charged at a fixed rate/employee. The minimum annual fee for a company with 2,000 employees is $4,000.

Volume discounts are also available, the spokesman said from Comshare headquarters at 3001 S. State St., Ann Arbor, Mich. 48106.

Unix III Alternative Aimed at Designers

SANTA MONICA, Calif. — Interactive Systems Corp. has released an operating system based on Bell Laboratories Unix System III that is said to feature greater processing speeds.

Aimed at the designer, programmer and documentor, Interactive System/3 (IS/3) features a change in the file system block size from 512 bytes to 1,024 bytes said to decrease data access times. IS/3 incorporates its own system management utilities.

IS/3 is available on Digital Equipment Corp. PDP-11 and VAX-11 computers and a wide range of peripherals, from DEC and other manufacturers. It will also be available on the DEC'a Zilog, Inc. Z8000-based Ides machine.

The PDP-11 version costs $17,500 and the VAX-11 version costs $23,500. Interactive Systems Corp. is located at 1212 Seventh St., Santa Monica, Calif. 90401.

'Rims/MPG' Introduced In Cobol

CORAOPOLIS, Pa. — Information and Systems Research, Inc. (ISR) has released a Cobol version of its Request-Oriented Information Management System/Mechanized Program Generator (Rims/MPG).

It is a data dictionary-based application program development system featuring individual program generator modules that produce all types of data entry and retrieval and sort and merge/update programs. It is available for Digital Equipment Corp. minicomputers running under RT-11, RSX-11M, RSTS/E and VMS.

Graphics and menu-generating capabiilities have been added. The design of the old software modules has been enhanced.

It is base-priced at $1,250. Details are available from ISR at Airport Office Park, Building 1, 410 Rouser Road, Coraopolis, Pa. 15108.

GREAT SOFTWARE ISN'T WRITTEN. IT'S ENGINEERED.

Software engineering means hardnosed quality control. It means extensible architecture. It means strict specifications for reliability and durability.

Each provided through intensive research, a disciplined development process and a commitment to excellence.

ENGINEERING FOR THE INFORMATION CENTER.

If backlog is jamming your responsiveness to end-users and you want a strategic, dependable solution you can build upon, you need advanced technology software engineering. And that's what you'll get from Informatics® Answer™ Series software products. The Answer Series satisfies just about every information need your end-user can come up with. "Do-it-yourself" tools for them. Control for you.

ENGINEERING FOR THE APPLICATION DEVELOPMENT CENTER.

Don't compromise your mainstream applications with short term approaches. Longevity, efficiency and reliability are crucial. Engineered software is even more important here. Informatics Mark™ Series application generators make your data processing efforts more effective. They increase application programming productivity from two to five times above current levels. Your entire staff can reach new levels of productivity.

It takes the resources of a company like Informatics to meet the information challenges of the 80s. We will continue to be a dominant force in leading edge IBM installations throughout the world. After all, we've been decreasing backlog, increasing productivity, and engineering great software for over 20 years.

Informatics General Corporation, Software Products Group, 21050 Vanowen St., Canoga Park, CA 91304, (213) 716-1616.

THE SOFTWARE ENGINEERS

informatics general corporation

CICS CUT DEVELOPMENT TIME

HIBOL Creates CICS Programs in COBOL. Write CICS Programs With Minimum CICS Training.

Increased Productivity
Simplified Maintenance
Standardized, modular Code

Delphi Data Systems Inc.
9905 Hamilton Road
Eden Prairie, MN 55344
612-941-9182

Security Levels Added to Version Of Testing Package for NCR Users

MINNEAPOLIS — Four levels of security have been added in the latest version of Century Associates, Inc.'s On-Line Program Development and Testing software system for NCR Corp. computer systems under NCR's B3 and VRX operating systems.

The first level of security is the user's access code, which consists of two initials and six digits, known only to the user. The screen is blank while the code is being entered.

The second level allows the user the option to restrict access to a file or files for a period of time. The third level of security allows individual files to have their own special codes for accessing, the vendor said.

In the fourth level, the DP manager has the option at the beginning of each day to have up to 50 programs with a second security code required for accessing. This option can be used for such files as payroll master records and financial reports, the vendor spokesman said.

The On-Line Program Development and Testing software costs $9,500 and takes one day to install, Century Associates claimed. The vendor is based at 8120 Penn Ave. S., Minneapolis, Minn. 55431.

VS Cobol Inventory Tool Targets Wang VS Family

MONTROSE, Calif. — An inventory management package written in Wang Laboratories, Inc. VS Cobol for use on the entire family of VS computers has been announced by Mini-Computer Business Applications, Inc.

The capabilities of the I/M package are applicable to both multiple-company and multiple-warehouse environments, the company claimed. The package allows warehouse transfers as well as issues and receipts, and quantities received in a purchasing unit of measure are automatically converted to the stocking/selling unit of measure, the vendor said.

To assure that adequate stock is available, I/M will calculate the quantity of an item to be kept as a safety stock and also creates audit trails, prints usage-exception reports and performs other analyses, the company said.

Source code licenses for the I/M package are $3,000 for the first use, with larger use licenses available at discounts from Mini-Computer Business Applications, 2441 Honolulu Ave., Montrose, Calif. 91020.

'Tract-80' Data Base Maps Census Data

LYME, N.H. — Geographic Data Technology, Inc. has announced Tract-80, a mapping data base for users of computer graphics systems.

The package provides coordinate values for 1980 census tract boundaries for all 323 Standard Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget in 1981.

The package costs $175 and is available in versions that are compatible with most computer systems. The vendor is located at 13 Dartmouth College Highway, Lyme, N.H. 03768.

OMEGA FACT SHEET #1.

Omega's *True* UPS System is Right for You. Here's Why:

The main purpose of an Uninterruptible Power Source (UPS) System is to maintain electric power, even if the outside power source should suffer surges, brownouts or even total blackouts.

Fact #1: In general, there are three popular UPS Systems; Non-battery, Static, and OMEGA Rotary.

Fact #2: OMEGA Rotary is a true rotary UPS system. During an emergency, OMEGA Rotary operates totally independent from any outside power sources. Non-battery does not!

Fact #3: OMEGA Rotary can operate under a wide range of changing temperature conditions. Static Systems need extraordinary and costly environmental control systems.

Fact #4: OMEGA Rotary can be used properly anywhere. But Non-battery Systems need access to two separate outside power sources.

Fact #5: OMEGA Rotary is a mechanical system and needs only simple, basic maintenance which can be from in-house sources. Static systems frequently need highly skilled, high-paid outside servicemen.

Fact #6: OMEGA Rotary as a true UPS System is far more cost-effective than any other competitive unit.

Fact #7: OMEGA Rotary is the *only* UPS System to use superior performance AvK (A. van Kaick) motors, flywheels and alternators.

Fact #8: OMEGA experts are ready now to answer any of your questions about your energy needs.

Fact #9: Omega offers other quality AvK energy products including; a full range of frequency converters, power stabilizers, paralleling units, control cabinets, brushless alternators and more.

PS. Watch for more "Fact Sheets" to follow offering information on other energy areas.

Give us a call and get the facts: **(914) 692-5858** Telex 64-6216.

UPS TYPE	INDEPENDENT POWER SOURCE	BLACKOUT PROOF	MOST ENVIRONMENTS	SIMPLE MAINTENANCE	SIMPLE INSTALLATION	AvK EQUIPMENT
OMEGA ROTARY	✔	✔	✔	✔	✔	✔
STATIC	✔	✔				
NON-BATTERY			✔	✔		

OCS

OMEGA CONTROL SYSTEMS INC.
Goshen Turnpike, RD 2
Box 91A
Middletown, New York 10940

DOS/VS(E) and CICS/VS

- SYSTEMS PROGRAMMING CONSULTING Consultants in Minneapolis, Wash. DC, and San Francisco, each with 10+ years experience.
- PROGRAM PRODUCTS 30 day trial. Full documentation on request.

BIMSPOOL DOS/VS(E) Terminal Printer Spooling
Retrieves batch print from POWER/VS queue, converts and prints on 3270-type terminal printer via CICS or SHADOW Jobs may also be viewed on CRT May be used to eliminate RJE printers $4000 or $200/mo

BIMSPOON On-line to Batch Print Spool
Used by DOS/VS(E) CICS/VS on-line application programs to create batch print reports under POWER/VS(E) Multiple tasks may create reports concurrently If used with BIMSPOOL, reports may be spooled to 3270 terminal printers. $840 or $42/mo

BIM-ODIS DOS/VSE CICS/VS Status Display
Summary, detail, and analytic displays of CICS/VS, DOS, VTAM, and OL/I tables and control blocks Used to determine CICS status and operational or performance problems $2200 or $110/mo

BIMSERV DOS/VSE Library and VSAM Catalog Display
Displays directories and entries in all DOS/VSE libraries, VSAM Catalog, Label Area, and VTOC's (CICS) $1480 or $74/mo

BIMTEXT Word Processing System
Create formatted documents from free-form input Margin justification, numerous other formatting options, permit document changes without retyping other text $2400 or $120/mo

BIMDSLOG DOS/VS(E) Console Hard Copy File Display
Used by operators or programmers to review DOS/VS messages via CICS or SHADOW without tying up system console $720 or $36/mo

BIMMONTR DOS/VS(E) System Status and Queue Display
The original and still best DOS/VS(E) system activity, POWER/VS queue, and POWER/VS job output display system (CICS) Numerous options to assist operators and programmers $920 or $46/mo

BIMDEVC DOS/VS(E) Device Assignment Status
Displays logical unit assignments to devices (CICS) $360 or $18/mo

BIMSUBMT DOS/VS(E) Job Submission Editor
On-line job stream editing, storage, and submission under CICS/VS $1000 or $50/mo

BIM B I MOYLE ASSOCIATES
4350 LYNDALE AVENUE SOUTH
MINNEAPOLIS MN 55409
(612) 822-3061 Telex 290 123
Member Independent Computer Consultants Association

AT YOUR SERVICE.

When specialized DP talent can make the difference between your project's success and failure, you should put Martin Marietta Data Systems' Professional Services specialists on your team.

WE SUPPLY SOLUTIONS.

You can count on our Professional Services group for exactly the skills you need. Whenever you desire. For as long as you require. And, you avoid the overhead costs of supporting a staff you may not need full time.

Systems Development. You can rely on our systems development staff for cost-effective software solutions to critical business problems. Using our proven Systems Development Methodology to assure project control and minimize risks, we can install and modify packaged software, develop custom-built software, and provide support for conversions and system migrations.

Systems Integration. When you need solutions to multisystem problems, our systems integration team can combine just the right mix of software products, existing systems, and even hardware to satisfy your requirements.

Consulting Services. You can take advantage of our consulting services in specialized business areas such as manufacturing management. And we offer expert advice on network communications, database technologies, computer operations efficiency, and other related areas.

Systems and Programming. When new systems requirements or temporary workloads call for more available manpower than you have on hand, we can supplement your staff with qualified systems and programming personnel.

Facilities Management. Depending on your needs, our facilities management team can assume responsibility for Operations, Systems or Programming. In fact, we can even plan and manage an entire data processing operation for you.

WE'RE PART OF MARTIN MARIETTA'S INFORMATION MANAGEMENT TEAM.

No matter how diverse your needs, you can look forward to the support of a world leader in information services. Our front line professionals have technical expertise, and years of experience providing solutions in critical information management areas—including database design, computer operations, customer order processing, inventory and production planning, and many others.

When you call on our Professional Services staff, you'll be served by computer system specialists with extensive experience gained from developing a wide range of business applications system packages. Our Professional Services group also profits from more than a decade of experience gained from operating our own IBM, Control Data, DEC and Hewlett-Packard data centers. And from managing the teleprocessing and communications capabilities that assure our Computing Services customers virtually unmatched service, 24 hours a day, 7 days a week.

WHEN YOU NEED EXPERIENCE, CALL ON US.

The next time you need the specialized skills of DP professionals, think of Martin Marietta Data Systems' Professional Services team. To find out more, return the coupon below, or call us at (301) 982-6500. We'll send you a free brochure that shows how Professional Services can work for you.

Send me your free Professional Services brochure. I am particularly interested in:

- ☐ **Systems Development**
- ☐ **Systems Integration**
- ☐ **Consulting**
- ☐ **Systems & Programming**
- ☐ **Facilities Management**

Name _____

Company _____

Title _____ Phone _____

Address _____

City _____

State _____ Zip _____

MARTIN MARIETTA DATA SYSTEMS
Marketing Services, CW/K
6303 Ivy Lane
Greenbelt, Maryland 20770

MARTIN MARIETTA

Micro Notes

Small Systems Engineering Corp. has released what it claims is a faster version of Petspeed, the optimizing Basic compiler that runs Commodore Business Machines, Inc. Basic. Petspeed costs $325 from the vendor at 222-B View St., Mountain View, Calif. 94041.

Most Cobol-based minicomputer business applications software can now reportedly be run on Zilog, Inc. Z80-based microcomputer networks that are implemented with Ryan-McFarland Corp. RM/Cobol, Musys Corp. Net/82 slave processors and the multiuser Software 2000, Inc. TurboDOS 1.2 operating system. RM/Cobol costs $750 from its distributor, Musys Corp., at Suite 11, 145t Irvine Blvd., Tustin, Calif. 92680.

Bizcomp Corp. has introduced two companion communications software packages for its Model 1080 Versamodem. Term Emulator II allows an Apple Computer, Inc. Apple II Plus to communicate with Source Telecommunications, Inc.'s The Source, Dow-Jones and university computers. Mini-McTerm brings the same capabilities to Commodore Business Machines, Inc. Pet, Vic and CBM machines. Prices are $29.95 for Apple, $74.95 for Pet and CBM; and $24.95 for Vic computers. Bizcomp can be reached through P.O. Box 7498, Menlo Park, Calif. 94025.

North America Mica, Inc.'s critical path Project Management System (PMS-II) is now available on the Hewlett-Packard Co. HP-125 microcomputer. PMS-II can be used on any machine supporting the Digital Research, Inc. CP/M or MP/M operating systems and CBasic2. PMS-II costs $1,295 from Suite 240, 11772 Sorrento Valley Road, San Diego, Calif. 92121.

Micropro International Corp.'s Wordstar word processing software is now available to run on the latest operating system for the IBM Personal Computer, IBM's PC-DOS 1.1. Wordstar costs $495 from tha firm at 33 San Pablo Ave., San Rafael, Calif. 94903.

Solutions, Inc. is offering Visibridge/RPT, said to enhance the report printing capability of Visicorp's Visicalc software. The package is available for Radio Shack's TRS-80 Models I, II, III and 16 and the IBM Personal Computer. All versions cost $79 through P.O. Box 989, Montpelier, Vt. 05602.

Selanar Corp. has announced a $450 graphics software package for Digital Research, Inc. CP/M and MP/M systems. SG-Plot provides software support for the firm's graphics enhancements for the Digital Equipment Corp. VT100 and Televideo, Inc. 925 and 950 terminals. Selanar is located at 437-A Aldo Ave., Santa Clara, Calif. 95050.

Hayes Microcomputer Products, Inc. has released communications software for its Micromodem II and Apple Computer, Inc.'s Apple II computer. The Terminal Program is compatible with three Apple operating systems: Apple's DOS 3.3, Apple Pascal and Digital Research, Inc.'s CP/M. The Terminal Program costs $79 from the firm at 5835 Peachtree Corners E., Norcross, Ga. 30092.

A screen editor with user-definable function keys that can run on "all major hardware systems," according to the vendor, is available from Volition Systems, Inc. The Advanced System Editor (ASE) is said to increase keyboard productivity by 25%. Now available for all versions of UCSD Pascal, ASE costs $175 through the firm at P.O. Box 1236, Del Mar, Calif. 92014.

Package Helps Define Chemical Structures

HAYWARD, Calif. — Molecular Design Ltd. has announced software said to enable analytical chemists to use a computer to determine the structures of unknown compounds.

The Generation of Overlapping Atoms (Genoa) software is designed for use with the Digital Equipment Corp. DEC-10 and DEC-20 computer systems. Input to the computer must include the molecular formula and reportedly can include any structural conclusions gained from spectroscopic and chemical data.

Genoa costs $35,000 from the firm at 1122 B St., Hayward, Calif. 94541.

Veterinarians Using System/23 Get Aid

HOUSTON — Agridata Systems, Inc. has released a system for veterinarians and animal hospitals using IBM System/23.

This package reportedly includes all the basic elements for managing a veterinary practice on a daily basis. It allows patient information to be kept and updated with each visit, prints visit slips and prices each activity, accounts for daily receipts, depletes and prices drug inventory, lists patients due for recall and generates reminder mailing labels and prints monthly management reports, according to the vendor.

Priced at $3,000, the software comes with diskettes, directions and manual from Agridata Systems at Suite 100, 8989 Westheimer, Houston, Texas 77063.

Now a DEC/IBM inter-connect that's cost effective

Your DEC computer has more important things to do than be a processor for your IBM communications. Save valuable computing capacity by handling this interconnect workload with COMBOARD™

To your operators, COMBOARD is a reliable package that doesn't decrease the number of on-liner users.

To your users, COMBOARD is a simple link to IBM systems for job and data transfer.

COMBOARD™

To your management, COMBOARD is a cost-effective solution to a troublesome problem.

COMBOARD models 631, 731 and 1231 support transfer rates from 4,800 to 56K baud. They are the leaders in DEC/IBM and DEC/GDC interconnects.

For more details contact your sales representative at Software Results at 614 421-2094 or mail the coupon today.

SOFTWARE RESULTS CORPORATION

1229 West Third Avenue
Columbus, OH 43212-3090
Telephone 614-421 2094

Send me more information on COMBOARD™

Name

Company

Address

Telephone

COMBOARD™ Software Results Corporation
DEC UNIBUS® Digital Equipment Corporation A226

IBM 3274 Users. How's This? 32 Coax Channels on 1 Coax Cable.

It's here. An entirely new multiplexer that can transmit all 32 signals from your IBM 3274 controller over one RG-62 coaxial cable to your peripherals. That's right, no more hassle of pulling bundles of coaxial cables through overcrowded ducts ever again! You probably already have the one required coax cable in place. For new installations, we recommend and offer this system with a fiberoptic interface. Now, you can transmit your data up to 2,000 feet between your IBM 3274 controller and up to 32 IBM 3278/9 terminals or IBM 3287 printers on one coax. Muxing takes place near your controller and de-muxing near your peripheral cluster.

For transmission to a mile, use the fiberoptic option. Local data rates are maintained and, as an added plus, the system operates with Memorex, Mohawk and Telex terminals. Cost? About $250 a port on a purchase basis, or less than $15 per port per month if you lease. Call us. We're offering fast deliveries and trial demonstrations.

Fibronics International Inc.
655 Concord Street
Framingham, Massachusetts 01701
(617) 872-9870

Fibronics
fiberoptic communications

HP 3000
HARDWARE AND SOFTWARE

ACCOUNTING
- Payroll, Personnel
- Labor Distribution
- Accounts Receivable
- Accounts Payable
- Fixed Assets
- General Ledger

INTEGRATED MANUFACTURING
- Order Entry
- Material Requirements Planning
- Inventory Control
- Shop Floor & Capacity Control
- Job Cost Reporting

DISTRIBUTION
- Order Entry
- Multi-Warehousing
- Shipping—Billing
- Accounts Receivable
- Replenishment Planning
- Distributed Processing

DISCOUNTS AND LEASING
- Up to 24% volume discounts on HP hardware-software systems sales
- Leasing available for hardware-software system sales

DATA SYSTEMS for INDUSTRY

Dems Carriers Poised to Begin Operation

By Phil Hirsch
CW Washington Bureau

- *Digital termination systems (DTS) will begin commercial operation in Atlanta and New York City or Chicago during the first quarter of next year.*
- *They will offer transmission speeds of 1,200 to 1.544M bit/sec.*
- *The most likely users will be large companies.*
- *The most popular applications will be high-speed facsimile, computer-to-computer bulk-data transfer, distributed data processing and remote batch at speeds of 9,600 and 56K bit/sec.*

Those are the highlights of an informal survey that *Computerworld* conducted recently among the first seven Digital Electronic Message Service (Dems) carriers authorized by the Federal Communications Commission. Dems consists essentially of DTS local distribution facilities in several cities interconnected by terrestrial and/or satellite long-haul channels.

ISA Communications Services, Inc. (Isacomm), headquartered in Atlanta, will be the service provider in that city, while Contemporary Communications Corp. (CCC) of New Rochelle, N.Y., is planning to begin its service in either New York City or Chicago.

Two other licensees, National Microwave Interconnect Co. (NMIC) of Atlanta and Tymnet, Inc. of Cupertino, Calif., plan to begin commercial service "early next year." NMIC plans to open in Houston, Dallas and Los Angeles, plus two other undisclosed cities. Tymnet has targeted San Francisco, Dallas and Washington, D.C.

While none of the vendors were willing to disclose the prices they plan to charge for DTS services, all agreed their charges would have to be competitive with AT&T's Dataphone Digital Service

(Continued on Page 48)

Tandem Nonstop CPUs Linked to SNA Devices

CUPERTINO, Calif. — Tandem Computers, Inc. has introduced a software interface to IBM's Systems Network Architecture (SNA) said to allow SNA devices to be controlled directly from a Tandem Nonstop II system.

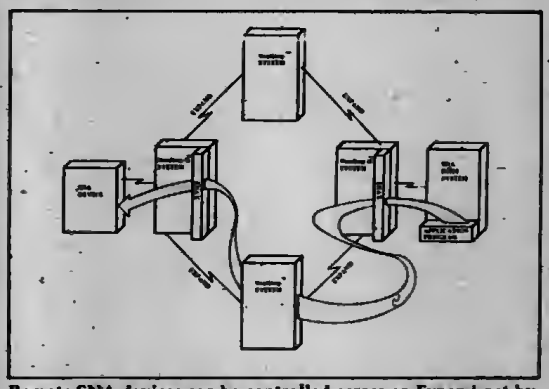
The Snax interface allows SNA-compatible automated teller machines, terminals used to collect information directly from the factory floor and other specialized devices to be integrated into a Tandem Expand distributed network, a vendor spokesman said.

Another feature of Snax is an interface that allows Tandem application programs to communicate with existing SNA application programs. For example, an SNA system containing credit information for retail-store customers can be linked with a Tandem system that monitors and controls point-of-sale terminals. A single entry into an electronic cash register might automatically initiate the credit checks in the SNA system.

The SNA software also allows Tandem equipment to function in a "passthrough" mode (see box at right). In this mode, an SNA host system can communicate with an SNA device in another location by using the Expand network as the communication link.

The Snax software for Nonstop systems only will be available next April for a license fee of $2,750 per processor, according to the vendor.

More information is available from Tandem Computers Corp., 19333 Vallco Pkwy., Cupertino, Calif. 95014.



Remote SNA devices can be controlled across an Expand net by an SNA host system in a configuration called "passthrough."

With Datasource Software

IBM Micro Gains 3276 Emulation

MINNEAPOLIS — Emulink, a full 3270 emulation package that enables users of IBM mainframes to utilize the IBM Personal Computer as a 3276 terminal, has been announced by Datasource Systems Corp.

Emulink allows users to communicate with an IBM mainframe in the same fashion as a 3270 CRT terminal while utilizing additional functions available on the IBM Personal Computer, according to Datasource Systems.

Among these functions are saving screen information to diskette; dumping screen information to print; command switching to local Personal Computer mode; and manipulation of captured information under IBM's Personal Computer disk operating system.

In addition, Emulink uses the 10 programmable function keys of the Personal Computer keyboard to allow the user to define a character string each of the keys will contain, the company said.

Emulink's price of $995 includes emulator hardware, software and documentation. The user must supply a binary synchronous modem and cable.

Designed and manufactured by Micro Link Corp. of Long Lake, Minn., Emulink is available from Datasource at 1660 S. Highway 100, Minneapolis, Minn. 55416.

- Integral RJ11 Jack for Telephone
- Voice/Data Switch on Front
- LED Carrier and Data Indicators
- EIA and Optional Current Loop Interface
- Small Size: 4x5x1½ inch

YOUR CHOICE!

Two choices from our family of 300 Baud Bell 103/113 compatible modems.

Choose one and send coupon for more information.

- Integral Modem and Telephone
- Pushbutton Dial on All Lines
- Auto Dial of Stored Number
- Auto Voice/Data Switch
- Auto Disconnect
- Auto Answer — $60 Additional
- LED Carrier, Ring, Data and Mode Indicators

305E2-12
modem
$147.00 ☐

☐ $277.00
370E2-12
phonem

☐ Acoustic Couplers ☐ Medium Speed Modems ☐ High Speed Modems
☐ Time Division Multiplexers ☐ Frequency Division Multiplexers

Please check items of interest and return to us for additional information

ComData
We can get you there from here.
7900 N. Nagle
Morton Grove, IL 60053 312/470-9800
New York 212/267-3696
Los Angeles 213/824-0550
member of IDCMA

name
company
street
city state zip
telephone ext

ANNOUNCING NETWORK SOFTWARE FOR THE ONLY CERTAINTY IN AMERICAN BUSINESS:

UNCERTAINTY.

COMMUNICATIONS SOFTWARE SO FLEXIBLE, IT'LL HELP YOU EASILY KEEP PACE WITH CHANGE, INSTEAD OF BEING OVERWHELMED BY IT.

In the absence of any quick and infallible means of foretelling the future, Data General has designed the next best thing:

The only networking software that accepts the inevitability of change—and is designed to be flexible and comprehensive enough to absorb change as it happens.

A TRANSPARENT SYSTEM THAT'S ACTUALLY TRANSPARENT.

Data General believes that when it's not necessary to change your applications software, it's necessary not to change it. And our networking software reflects this.

Those periodic network changes that all companies go through (from new computers to new communications links) will require no corresponding overhaul of your applications programs. Your accounting department, for example, can relocate to another floor, city or even continent without requiring any change in the way your accounting people access or use information. Sparing you any hurried, and costly applications reprogramming.

SNA AND X.25 NETWORKING THAT WORK IN CONCERT, NOT AT CROSS-PURPOSES.

While there are dozens of companies touting networking software, only a few promise SNA compatibility.

Of these, only one, Data General, is delivering SNA and X.25 networking running simultaneously on the same machine. And the advantages of this in terms of communications flexibility are self-evident.

LOCAL AND REMOTE NETWORKING THAT ACTUALLY EXISTS.

You are currently being urged into office automation on practically every other page of publications such as this.

What's ironic is that many of those doing the urging do not offer the integrated local and remote networking without which true office automation is impossible.

Data General does.

Nor do we require you to make any hard choices to support your network.

Whether it's local, global, batch, interactive, public, private, bisync, SDLC, peer, hierarchical, commercial, scientific, mini to mini, or mini to mainframe, Data General has it. And it all runs on our ECLIPSE® family of 16- and 32-bit computers.

All of which is vital.

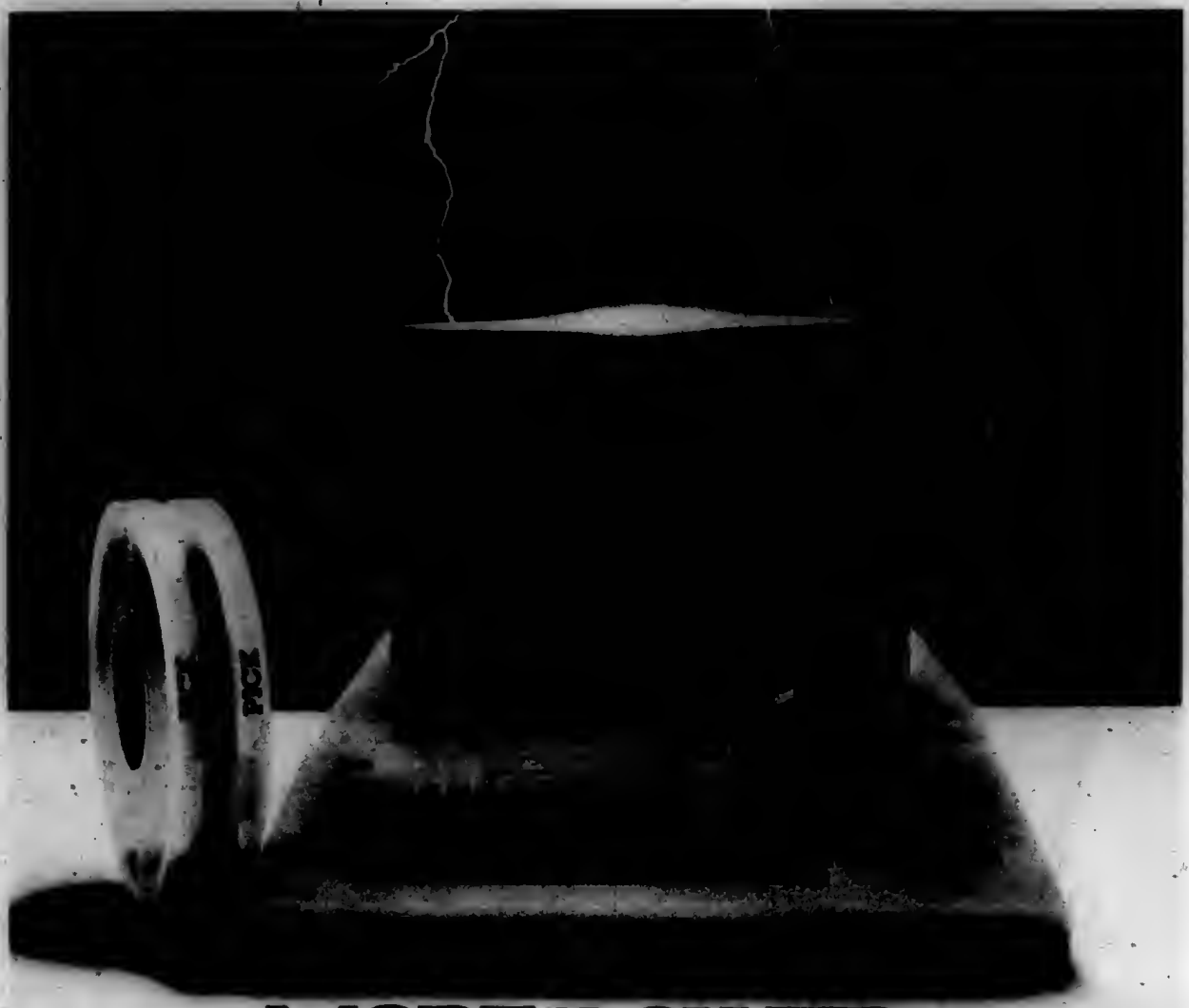
After all, if you're being asked to build a network, you're in effect being asked to do the impossible—namely, see into the future. And nobody else makes the impossible as accessible as Data General.

For more information write to Data General, Dept. B1, 4400 Computer Drive, Westboro, MA 01580.

Data General

WE ENGINEERED THE ANXIETY OUT OF COMPUTERS.

© 1982 Data General Corp. ECLIPSE is a registered U.S. trademark of Data General Corp.



MORE POWER TO YOU.

CDI unleashes the IBM Series/1.

No one can argue with the raw power available in the IBM Series/1 minicomputer. Or that its performance and reliability make it highly cost effective.

To realize the full potential of the Series/1, all it required was an equally powerful operating system. Like PICK.

Under various trade names, PICK versions are widely known and appreciated. On Microdata, for example, PICK is REALITY. With its simple-sentence structure, it is the most user friendly data base software in existence.

Now, in an unprecedented union, CDI brings these two industry front runners together. The best. And the brightest. Never before has so much power been so concentrated or easier to use.

CDI

COMPUTER DISTRIBUTORS, INC.
1-800-426-8931

JOIN THESE EXCLUSIVE DEALERS.

CDI is looking for highly qualified dealers to market the PICK implemented IBM Series/1.

For inquiries, call CDI toll-free at (800)426-8931. Or write Computer Distributors, Inc., 1309 114th Avenue S.E., Suite 300, Bellevue, WA 98004.

DIVERSIFIED COMPUTER CORP.
1802 IBM Building
1200 Fifth Avenue
Seattle, WA 98101
(206) 223-9326

DATA ENTERPRISES OF THE NORTHWEST
800 South Michigan
Seattle, WA 98108
(206) 762-9474

COFFMAN SYSTEMS, INC. (CSI)
530 E. Plumb Lane
Reno, NV 89502
(702) 827-4900

MRP, INC.
1430-M South Village Way
Santa Ana, CA 92705
(714) 972-2000

COMPUTER DATA-RESOURCES
925 South Niagara,
Suite 100
Denver, CO 80224
(303) 388-4041

SUNBELT DATA SERVICES, INC.
10103 Fundren, Suite 220
Houston, TX 77096
(713) 777-6515

IMPROVED INSURANCE SYSTEMS, INC.
300 West Adams, #623
Chicago, IL 60606
(312) 782-6520

SYSTEMS MANAGEMENT, INC.
6300 North River Road
Rosemont, IL 60018
(312) 298-3840

DATA MANAGEMENT SOLUTIONS
6785 Telegraph Road,
Suite 390
Birmingham, MI 48010
(313) 540-2211

EDP OF AMERICA, INC.
Cleveland Plaza
123 North Union Avenue,
Suite 202
Cranford, NJ 07016
(201) 272-0770

Canadian Distributor:

PARAGON COMPUTER GROUP, LTD.
567 Clarke Road
Coquitlam, B.C., Canada
(604) 939-6461

CDI
COMPUTER DISTRIBUTORS, INC

Allows Transmission Up to 56K Bit/Sec

SDLC Available on Satellite Net

MEMPHIS, Tenn. — Cylix Communications Network has announced that IBM's Synchronous Data Link Control protocol, one of the methods used for communications between CRT terminals and IBM computers, is now available on the vendor's high-speed satellite communications network.

The protocol capability allows organizations to send messages at speeds up to 56K bit/sec between IBM 3270 series or equivalent terminals and mainframe computers regardless of where in the continental U.S. the terminals or the computers are located, according to a vendor spokesman.

A permanent virtual circuit gives the user organization a continuous link between its terminals and computers as though one were plugged directly into the other, a vendor spokesman said. The difference is that the user on an asynchronous network generally has to dial a telephone number and go through a canned setup procedure to establish that link.

The cost of communicating over the network depends on the number of locations serviced and the amount of message traffic transmitted, but the average user currently pays about $400/mo in usage charges. A company with 10 drops might expect to pay about $4,000/mo plus the cost of the host computer, a vendor spokesman said.

More information is available from Cylix Communications Network, 860 Ridge Lake Blvd., Memphis, Tenn. 38119.

Processing Unit Renders Dumb Terminals Smart

WESTBORO, Mass. — A processing unit said to convert dumb terminals into intelligent workstations with personal compute functionality and host-CPU communications has been introduced by 3R Computers, Inc.

The Avatar TC1 Terminal Converter transforms any CRT terminal into a personal computer system that provides local processing and data storage, plus bidirectional data transfer functions, the company said. It requires no system modifications and maintains complete CRT compatibility with the host CPU, as it features a universal data handler and Ascii file-transfer utilities.

Installed on-line between a terminal and host computer, the microprocessor-based converter is equipped with 64K bytes of volatile and nonvolatile random-access memory and 4K bytes of erasable programmable read-only memory. Single or dual 5¼-in. diskettes provide storage up to 410K byte/drive. Options include a 20 mA adapter cable and parallel-printer interface.

Avatar TC1 Terminal Converter is priced at $1,795 and is available from 3R Computers, 18 Lyman St., Westboro, Mass. 01581.

Terminals Feature Intelligence

SAN JOSE, Calif. — Wyse Technology, Inc. has introduced three intelligent terminals — the WY-200, the WY-300 and the WY-400.

The WY-200 is said to feature a detached keyboard, green phosphor screen, simultaneous horizontal/vertical split screen, 32K bytes of random-access memory (RAM), data validation, 19.2K bit/sec rate and an Intel Corp. 8088 microprocessor. It costs $1,295.

The WY-300 features include those of the WY-200 with down-line load and execution out of RAM, 128K bytes of RAM, hidden screen attributes, two independent communications ports and local text editing with word wrap. It costs $1,595, the vendor said.

The WY-400 has the additional feature of one RS-232 port and one high-speed R-422 port. It costs $1,695.

All three terminals will be available in October from Wyse Technology, 2184 Bering Drive, San Jose, Calif. 95131.

Modem Introduced

HUNTSVILLE, Ala. — Universal Data Systems, Inc. has introduced a modem designed for four-wire operations in point-to-point configurations that process 9,600 bit/sec of synchronous data.

The built-in test functions of the V.29-compatible 9600 Data Modem is said to allow a rapid four-step check of the data terminals, modems and telephone lines. An automatic digital adaptive equalizer overcomes the effect of large variations in delay and amplitude distortion that would otherwise cause intersymbol interference, a vendor spokesman said.

The modem is available for $2,650 from Universal Data Systems, 5000 Bradford Drive, Huntsville, Ala. 35805.

VSAM PROBLEMS?

RECOGNIZE THESE PROBLEMS???

- Do you experience delays because of VSAM file errors?
- Are you tired of writing VSAM "I-o-d" programs?
- Are you still using IDCAMS to build VSAM test files?
- Remember the last time you deleted a VSAM record?

VSAM WILL HELP YOU SOLVE THESE PROBLEMS AND MORE!!!

FEATURES:

- Self prompting, immediately usable
- Interactive, runs under CICS in either DOS or OS
- Displays, adds, changes or deletes records online
- Locates records by either full or generic key
- Manipulates data at byte level in character, packed or hex
- Handles KSDS, RRDS or ESDS formats, clogged or unclogged!
- Installs in less than one hour by your system's programmer
- Thirty day free trial with no obligation to buy

MB & ASSOCIATES 303-363-8113
97 SOUTH HOME AURORA COLORADO 80012

CICS
COBOL APPLICATIONS
EATING UP YOUR SCHEDULE & BUDGET?

INVESTIGATE EASYSCREEN/CICS®

THE DEVELOPMENT TOOL THAT CREATES WORKING BMS MAPS AND GENERATES COBOL PROGRAMS IN MINUTES. EASYSCREEN/CICS® USES STANDARD VSAM OR DL/I ACCESS TECHNIQUES WITH ADD, UPDATE AND DELETE CAPABILITIES FROM A STANDARD SPECIFICATION FORM.

Contact: (208) 342-6878

PRODATA INC.
063 S. Capital Blvd.
P.O. Box 44151
Boise, Idaho 83704

VAX SOFTWARE!

PACS with EZLOG is today's standard in

Resource Accounting
Performance Monitoring
Internal/External Billing
Project-Based Accounting

PACS with EZLOG can be yours with a telephone call. Get details now

STI
Signal Technology, Inc.
5951 Encina Rd. Goleta
California 93117 (805) 683-3771
Outside California Call Toll Free
(800) 235-5767

VAX is a registered trademark of Digital Equipment Corporation

Dems Carriers Outline Objectives, Competition

(Continued from Page 43)

(DDS) tariff. According to CCC President Howard Klotz, this means Dems rates will have to be at least 10% below AT&T's at equivalent transmission rates.

Most of the rate competition, however, will be with local telephone operating companies rather than AT&T's Long Lines Division because only a few Dems carriers plan to operate their own intercity transmission facilities. That means the typical Dems operator will be faced with the problem of pricing its DTS channels low enough to simultaneously undercut intracity DDS and wean the long-haul user away from intercity DDS.

What Dems network operators must charge to meet these objectives is unclear at the moment, partly because of AT&T's impending divestiture of its operating companies. Once the operating companies become independent, it is possible that existing intracity DDS rates will be lowered to stave off competition.

However, one Dems operator pointed out that the operating companies may be constrained by their state regulatory commissions, which are concerned that lower rates for business-oriented communications services means higher charges for residential users.

Most of the Dems operators surveyed do not anticipate competing solely on the basis of price. A number pointed out that although AT&T now offers DDS in 93 metropolitan areas, prospective users often have to wait several months for their orders to be filled. Dems vendors believe this gives them a competitive advantage since they will be able to provide channels much more quickly.

The switching and channel-subdivision capabiltiies of Dems are two other allegedly competitive advantages of the new service. DDS is a nonswitched offering, and AT&T support of channel subdivision is extremely limited, Dems vendors said.

Four of the Dems carriers licensed so far appear to have at least the beginnings of a customer base. Three — Satellite Business Systems, Tymnet and Isacomm — already offer data communications services and presumably will switch as many of their customers as possible to DTS circuits from the facilities now leased from local telephone companies. Allstate Insurance Co. and Bache, Halsey, Stuart, Shields, Inc. (a brokerage house owned by Prudential Insurance Co.) have invested in CCC and almost certainly will use its network for their in-house communications.

Two other Dems licensees — NMIC and Digital Termination Services, Inc. (DTSI) of New York City — are still negotiating with prospective corporate backers. The seventh licensee, MCI Telecommunications Corp. of Washington, D.C., is primarily in the voice communications business, and it is generally agreed that putting voice traffic on DTS channels is not a very profitable use of the bandwidth.

However, according to a spokesman, MCI plans to offer a service "by next year at this time" which will make voice transmission economically feasible. The spokesman declined to go into detail, but indicated that MCI is considering a digital local-distribution network employing point-to-point microwave transmission between 10.55 and 10.68 GHz, highly directional two-way antennas and possibly a bit-compression scheme permitting voice to be transmitted at considerably less than 64K bit/sec, the rate now used by the telephone industry.

Cable TV Net

Along with other Dems operators, MCI is looking at cable TV as a possible delivery network. The company is now using a cable TV network in Omaha, Neb., to transmit voice traffic on an experimental basis, and it plans to add data transmission later.

Two similar tests are scheduled to begin before the end of this year, according to the MCI spokesman, but he declined to say where.

The DTS now being developed by the other licensees consists of one or more microwave transceivers. Each transceiver serves a radius of four to 10 miles. Atop the transceiver are three antennas; they divide the service area into 120-degree sectors.

The transceiver will communicate with users via 1,544M bit/sec full-duplex channels. One channel will be assigned to each sector. At the user's station a small-diameter antenna will be mounted on his rooftop or in a window opening; that antenna ia connected to his terminal interface by coaxial or fiber-optic cable.

"The proliferation of financial planning languages will create chaos throughout corporate management ranks. In the future, we will see one standard modeling language that extends from the personal desk-top computer to the central corporate information center."

G R Wagner, Ph D
Chief Executive Officer
Execucom Systems Corporation

Execucom is not in the business of catching up or staying put.

Nor are most of the executive-managers that we know. That's precisely why our leading-edge technology has provided IFPS®, the Interactive Financial Planning System. Financial planning becomes easier. More alternatives can be considered. Assumptions are more clearly understood and decisions are based on better information.

IFPS is now in its eighth enhancement and will continue to improve as it makes your people more productive and your company a better place to work.

Execucom will also continue to meet the challenges of the future as we develop the tools that will bring order to the chaos.

For a schedule of Execucom's free seminars to be given around the country, or for more information, call toll free 1-800-531-5038. In Texas call 512/346-4980, or send the coupon to: Execucom, P. O. Box 9758, Dept. CW13-I, Austin, TX 78766-9758.

I'd like to know more about the leader in Executive Mind Support. Please send more information about IFPS and related products.

Name
Title
Company
Address
City
State Zip
Telephone

EXECUCOM
Supporting the mind with knowledge through technology.

Intelligent Terminal Sports Line Drawing

COMMACK, N.Y. — Hazeltine Corp. has introduced a smart CRT terminal that is said to offer line drawing, high-performance editing, a detached keyboard and a nonglare screen with green phosphor.

The Espirit III incorporates a switch-selectable foreign power option, a printer buffer and a bidirectional auxiliary port with independent bit/sec selection from 50 to 19.2K. It also features an RS-232C communications interface.

The terminal is available for $895 from Hazeltine, Cubahill Road, Greenlawn, N.Y. 11740.

The Virtual Meeting

A Report on Computer Conferencing

By Clifford Barney
And Thomas B. Cross

Computer conferencing is widely regarded as a new-fangled, mysterious substitute for a face-to-face meeting and in this respect suffers by comparison with video conferencing. This "horseless carriage" approach — calling something by what it's not — overlooks the most significant aspect of computer conferencing: this new medium is really not a substitute for anything.

Computer (tele)conferencing, sometimes called text or terminal conferencing, lets users conduct meetings with personnel in different geographic locations. An on-line memo system is used to record communications among meeting participants. Each conferee can access, read and respond to these communications, regardless of whether other participants are communicating simultaneously. The system also provides a transcript of the meeting.

The non-real-time method of participation offers

Photo by Kathleen Gow

IN DEPTH

extraordinary flexibility, especially if meeting members travel frequently or are in different time zones. The technique has proven to be highly effective for managing ongoing project activities and information exchange.

Computer conferencing uses the power of a CPU and communications network to support ongoing group interaction. Its most original contribution is its inherent ability to create a continuous record in machine-readable form. Participants in a computer conference always have access to complete documentation of their common project. And because the text is machine-readable, it may be searched by keyword, date or source and integrated with the individual user's private text files.

The second major aspect of computer conferencing, and the one that distinguishes it from all other forms of group activity, is that it operates in non-real-time, or asynchronously, doing away at a stroke with all of the administrative headaches associated with getting the attention of a large number of people at the same time. The flip side is also true: Everyone can have the floor at the same time.

Members of a computer conference are not normally on-line at the same time. They communicate indirectly, through the computer files that they jointly create. Meetings can now take place at any time and just about anywhere in the world. The host system software keeps track of who has seen what material through a status system.

The conference, then, is an ongoing affair, not a specifically allocated chunk of time. Its duration depends on the nature of the group task and the inclination of the participants. It is not tied to anyone's time schedule, and it allows members ample time to reflect on the issues.

Joint Access

What are the benefits of joint access to a text system? Basically, the network allows its nodes to share information. Text and data are made available widely (but controllably) and are susceptible to any of the software manipulations the user may care to employ.

The essence of information — as opposed to data — is that it has been evaluated by people for use in a particular situation or class of situations. It has been "humanized." Whereas data processing deals with numbers and values, computer conferencing deals primarily with text. It is therefore particularly suited for communications between humans.

"This communications tool is so powerful that it will soon come to dominate any system of which it becomes a part. It will change people's way of doing business," comments Jim Norton of Tymshare, Inc., who has been working with the firm's Augment system since its inception as a research project more than 15 years ago (see product roundup beginning on In Depth/7).

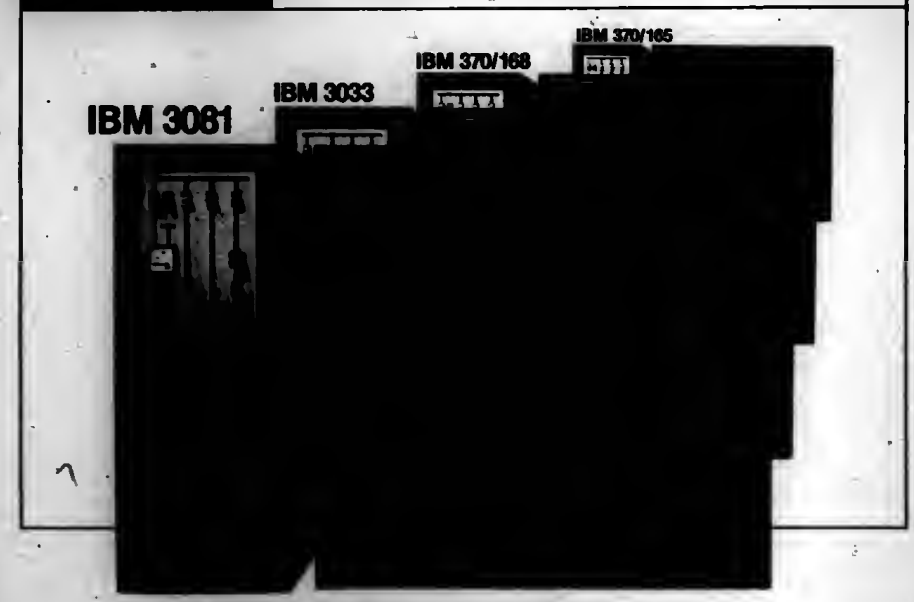
How that change will come about is difficult to predict, since computer conferencing may be used in a wide variety of applications, but has yet to be adopted so widely as to permit easy generalizations. Because of the large amount of time executives spend in meetings (up to 80% or more of their working day), the most likely area for its use will be in supplementing face-to-face meetings. All one needs is a computer system with a sufficient number of terminals.

With computer conferencing, the meeting is not dependent on any one person's time schedule. A meeting can go on for long or short periods, controllable and facilitated by the conference manager who may, in fact, be located in another city. Most often, conventional meetings must be scheduled so far in advance that interest in them, as well as their ultimate impact, are lost. In one recent Satellite Business Systems (SBS) study, the average delay between the decision to have the meeting and the time of the meeting was found to be 47 days.

Even when the manager is down the hall, computer conferencing keeps people in touch. Assignments can be given and people can respond, argue or discuss work without having to go to a meeting. Conversely, there is ample time for reflection, which might not be avail-

PILLER

POWER SYSTEMS FOR COMPUTERS



Then and today...
PILLER IS STILL NO. 1

Announcing the PILLER 40 KVA power system for IBM system 3081*...the only 40 KVA power system that meets IBM specifications—and—incorporates PILLER's exclusive paralleling design.

This permits redundant operation of two or more PILLER 40 KVA Frequency Converters to support single or multiple 3081 CPU's, expandable on a modular basis.

And as usual, the PILLER 40 KVA Frequency Converters offer a number of other exclusive advantages not currently available in other power units...including dual input voltage capability (either 208V or 460V input)...and a special startup system which reduces surge demands to half those of other frequency converters.

*Also meets specifications for AMDAHL System 580.

All this at a cost that is competitive with the IBM Model 3089 power unit.

Today, as then, PILLER offers more 60 Hz Motor Generator and 415 Hz Frequency Converter models than any other manufacturer, plus a full range of paralleling, power distribution and control equipment required for total power system integration.

No wonder PILLER remains the NO. 1 CHOICE in power protection for IBM CPU's, with more than 3,000 systems installed coast-to-coast.

Like to know more? Contact Murray Lazar, Director of Marketing. (914) 355-6741.

CONTROL SYSTEMS, INC.

IN DEPTH

able in a face-to-face meeting.

Unlike traditional correspondence, computer conferencing provides an ongoing electronic filing system for systematic and rapid retrieval: an electronic library at the user's fingertips. How many times have you lost something on your desk? Most computer conferencing systems are organized like "electronic desks" with places for memos, letters, messages, bulletin board and calendar.

Newspaper Systems

The closest approach to an industrywide application of computer conferencing may be the text editing systems now used by most newspapers. These are not normally thought of as conferencing systems, yet they bear many resemblances in that the text they handle is subject-specific and shareable by many users. Reporters create files that may be copied to other individuals or sent to general collections such as "sports" or "city desk" or "features." These files are managed and indexed by the software.

Newspaper text systems have provided users with great flexibility in creating, editing and printing stories. One of the most noticeable effects on newspaper operation has been the virtual elimination of the "back shop." Gone are the banks of linotype machines and the noisy composing rooms. Text now comes out of the editorial office in camera-ready form. The effect on the industry's economics has been deep.

But newspaper systems would have to be considered special cases of computer conferencing. What does the general form look like?

Applications Package

A computer conferencing system is a software applications package that permits a user group of any size to create, store and distribute text (in many cases, graphics and data as well).

"Creating" text means putting it into machine-readable form. That task may be performed either within the conferencing system or outside it. (Text editors on most conferencing systems are primitive; and in any case, off-line preparation of long text files saves on communications costs.) New text is kept in a temporary storage area until the user instructs the system as to its ultimate disposal. Normally, the options are to put the text into a private or memoranda file, a conference or a message file.

Specifically, computer conferencing is an interactive computer software system that generally allows for the following:

- Many-to-many communications with special areas for electronic meetings and discussions. These areas are accessed by people with approval of the conference manager, much like a normal meeting. Discussions cover various topics, specific interests and work activities. Calendar, scheduling and decision support systems can also be added.
- Personal notepad-memo and work areas. Each user has private files or scratchpads that are kept on-line for ease of use. Notes or memos can be sent either to other conferees or to a group conference.
- On-line bulletin board.
- Management and user reports and directories.
- On-line newsletters and journals.
- Status and tracking functions.
- Electronic mail/messaging, both one-on-one and broadcast communications.

'The closest approach to an industrywide application of computer conferencing may be the text editing systems now used by most newspapers. The text they handle is subject-specific and shareable by many users.'

However they are called, these options all implement more-or-less file processes. Private files and messages resemble their counterparts in word processing and electronic mail systems. It is the conferencing software — and the flexibility that permits material to be switched among the

Decision Makers

Since your organization uses computers . . . shouldn't you listen to the man the computer experts listen to?

THE JAMES MARTIN 1-DAY EXECUTIVE DP SEMINAR

Hear the Man Computer Experts Listen to!

An Exclusive DP Seminar at the Executive Level

- Learn how dramatically new technologies will affect your corporation.
- Discover how to get what you need from your computer department when you need it.

It is critical that management develop a strategy for the integration and management of the latest data processing and computer technology and begin construction of the "computerized corporation."

Here's the seminar which describes these new technologies and the vital roles end-users and senior management will play in implementing the new information resource revolution.

The Corporation of the Future

- Information retrieval
- User-driven computing
- Data base
- Distributed processing
- Application development without programmers
- Personal computers
- Business graphics
- Office-of-the-future
- Strategic Planning

An integrated corporate infrastructure needs to be designed. JAMES MARTIN WILL GUIDE SENIOR MANAGERS through the current DP/computer revolution so that current and future corporate strategies can be developed and cost-effectively implemented.

Recognized as the leading expert in the computer industry.

The James Martin 1-Day Executive DP Seminar Schedule

October 4, 1982	Atlanta
October 5, 1982	New York
October 7, 1982	Toronto
October 8, 1982	San Francisco
November 4–5, 1982	Bermuda

Call or write for further information:
(213) 394-8305

Please send me more information on the James Martin Executive DP Seminar.

NAME
COMPANY NAME
ADDRESS
CITY STATE ZIP
TELEPHONE
8/20/82

TECHNOLOGY TRANSFER INSTITUTE
741 10th ST. SANTA MONICA CA 90402 (213) 394-8305

IN DEPTH

various subsystems — that makes conferencing so attractive as a medium for cooperative action.

A "conference" is a software subsystem that recognizes certain user accounts as privileged to read and write files. Typically, in an open conference, all members may read all items and contribute their own at will. They are not usually permitted to change files created by others, but this aspect is up to the system designer; all permutations are possible. It is frequently useful to give at least one member editorial power to add and delete text.

There may be many conferences within a system. Each may be open to anyone with a password into the system or may be restricted to a specific group. In either case, the software will keep track of who belongs to which conferences and, within each conference, will log who has seen which items. A user who logs in will be notified when there is new material present.

Within these general outlines, conferencing systems may take a variety of forms. Some, like Infomedia Corp.'s Notepad, are extremely simple and tightly controlled from the top. By contrast, the experimental Electronic Information Exchange System (EIES) offers a great variety of usage patterns. EIES is almost baroque in the multiplicity of its subsystems. Almost every type of communications pattern may be found somewhere on EIES, if the user knows where to look. Designer Murray Turoff has even constructed an electronic "marketplace" where members can advertise information and buy and sell it, with the EIES host recording the exchange of credits.

Designed for organizational hierarchies, Matrix from Cross Information Co. offers a range of management levels to fit corporate structures. (See product roundup beginning on In Depth/7 for more information).

Though computer conferencing software looks like any other applications program, its structure reflects its direct use by people signaling in natural language, where the conventions are implicit rather than explicit. There is a strong semantic component to the relation between subsystems. Conferencing systems make the learning process a lot easier by providing menus, maps to the logical network and on-line help to step the inexperienced user through the labyrinth.

The Virtual Meeting

Once understood, conferencing becomes a powerful tool. Conferences may contain text (and numbers) in any form. Content may range from items of general interest for a loose group of colleagues to the draft of a precise electrical specification. Because any item can be a mix of text and programs (a program is, in a sense, a particular kind of text), one item can call up other text items or other software.

By up and downloading conference material to and from personal computers, the individual user can easily integrate private work with that of others. A software program called Mist, offered by New Era Technologies of Washington, D.C., allows personal computers to generate text and send it into computer conferencing systems.

This very flexibility makes the application of computer conferencing difficult to define. Computer conferencing is basically a network by which people with a joint purpose may conveniently carry it out. The goal may be the organization of a complex task or the creation of a jointly authored text. The SBS study found 64% of its subjects wanted increased communications with distant persons. Some examples of computer conferencing applications are described beginning on In Depth/14.

In general, computer conferencing is useful for both continuing and ad hoc projects. It is important to remember, however, that computer conferencing is not a substitute for face-to-face meetings, because it is spread over time. Where a face-to-face meeting or a teleconference might be called to integrate work done prior to the meeting or to assign future work, the computer conference is for work, discussion and consensus activity.

The medium has its limitations.

How MSA can your payroll system in

Two [illegible] time you need to have the MSA Payroll System up and running. A flexible, modern, state of the art system that can be ready to process your 1983 payroll. That's revolutionary.

Best of all, you can make it happen for as little as $30,000.

You don't have to worry about frustrating implementation delays. The system is user-friendly and ready to implement.

The MSA Payroll System is online, easy-to-use and totally secure. You can choose from a wide selection of online screen formats. Or you can create your own. Quickly and easily.

Standard, flexible system features allow immediate implementation of new requirements, such as IRA and 401 (k) plans. Automatic check reversal and ACH are also standard. And magnetic tape reporting is provided for U.S. and Canadian requirements.

Like all MSA systems, MSA Payroll comes with a full year of regulatory services and enhancements *at no charge*.

Importantly, your MSA Payroll System can be easily integrated with our Personnel Management System to give you a complete Human Resource capability—solving the problem of systems that don't talk with each other.

IN DEPTH

However, the chief limitation, the lack of good graphics, is gradually disappearing. Some conferencing packages, such as Augment and Data Dynamics, Inc.'s Genie, do contain graphics software. Matrix is modular to the extent that it can interface other computer programs (graphics or otherwise) available on the mainframe. In other applications, users have valiantly tried to simulate graphics with alphanumeric characters.

However, there is no intrinsic reason that conferences cannot include graphics, financial modeling or any other computer activity. As the cost of graphics terminals declines, these programs will fit together as the user requirement grows.

Security is always an issue in systems used by large numbers of people. It takes on a quixotic aspect in the discussion of systems which are, after all, designed to disseminate information, not restrict it. There is a wide range of restrictions available for conferences, messages and personal "padlocks." Conferencing folklore is rich with tales of broken security codes, and in some circles, not to have penetrated the Defense Department's Advanced Research Projects Agency Network (Arpanet) is to lack a required "merit" badge.

Security breaches aside, system malfunctions can result in lost and misdirected data. EIES has a whole conference devoted to mishaps involving GTE Telenet, the packet network by which many members access the system. However, most mishaps are minor inconveniences.

Technical problems aside, user interaction is difficult to control on a network. This does not mean that secrecy is impossible; it depends on the network users, not the host. As yet, there are no software programs that censor. And restricting the allowed interaction of nodes obviously restricts the power of the network. One conferencing system became known as "Gripenet" after some of its members took issue with IBM policy on the VM operating system.

With much of the necessary equipment already in place, the main barriers to computer conferencing access are psychological. The user must read and probably write on the terminal. No one likes to write; it is a tedious and lonely task that reminds one at every step of one's imperfections. And pounding a terminal is seen by the managerial class, which could presumably benefit from the use of computer conferencing, as a task for underlings.

The absence of these prejudices in the newspaper publishing field, where writing is prized and typing ability is routine even among top editors, may be one reason that editing systems have become pervasive so quickly.

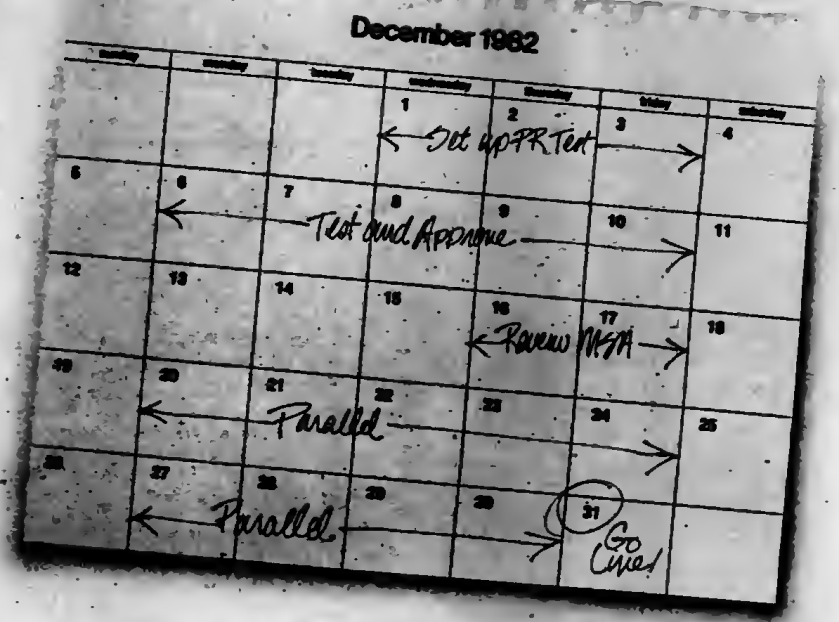
Of course, most groups would also have a number of "cyberphiles," those who become infatuated with the high-tech gizmos. Prof. Starr Roxanne Hiltz, a sociologist from the New Jersey Institute of Technology, surveyed 200 professionals using computers, many for the first time. She found that about 20% became so dependent on their terminals that when the computer didn't work, neither did the users. Most users now realize that computers do improve both quality and quantity of work.

A study of EIES usage by Hiltz showed the prime determinant of system use to be not typing ability,

Advantages Of Computer Conferencing

- No time restrictions. No one is ever late for a meeting; no more telephone tag.
- No geographical restrictions. The system is always there.
- Lowest cost of teleconferencing technologies.
- Self-documenting and filing. The system serves as an electronic desk.
- No actors or performing skills required.
- Allows time for thought in work and management.
- Self-paced training.
- Users can participate in many conferences in a day. Waiting at the airport is eliminated.

revolutionize less than two months



The MSA Payroll System is proven. It is the most widely used payroll system in the world. We've solved payroll problems for thousands of companies and organizations like yours. They depend on our system for reliable, timely check generation as well as flexible, user-oriented features.

A close look will show why more organizations buy from MSA, the software company with more payroll experience than any other.

Write or call for information

For more information about the MSA Payroll System, call Robert Carpenter at (404) 239-2000. Or clip this coupon.

Management Science America, Inc.
3445 Peachtree Road, N.E., Atlanta, Georgia 30326

There's no time to lose. Please send me more information on the MSA Payroll System.

Our computer type/model is: _____/_____
Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Business Phone _____

MSA
The Software Company CW(9/20/82)

IN DEPTH

Info Savvy

You know the guy: He comes into your store with a solid understanding of what he needs. He asks for specific products and the sale is quickly consummated. He's a regular customer and you enjoy doing business with him.

We know this guy, too—he's our typical reader.

INFOWORLD, THE ONLY MICROCOMPUTER NEWSWEEKLY, WILL INCREASE YOUR STORE TRAFFIC AND EDUCATE YOUR CUSTOMER.

InfoWorld educates and motivates so you don't have to. It raises your customers' level of product awareness and understanding. It generates buying activity. People who read InfoWorld know how fast the market changes, they can anticipate trends and make intelligent buying decisions as a result. They're exposed to information on new products, hardware and software reviews, and overall industry activities, every single week.

Do do yourself a favor: Do your customers a favor. Carry InfoWorld, the newsweekly that turns prospects into purchasers. And makes you money. Call today!

Contact InfoWorld's Circulation Marketing Manager at (415) 328-4602 from California, or call toll free, (800) 227-8365 from outside California. Or clip this ad, drop it into an envelope with your business card, and send to:

InfoWorld

The Newsweekly for Microcomputer Users

530 Lytton Ave., Palo Alto, CA 94301

TO SURVIVE IN THE ACCOUNTING SOFTWARE JUNGLE...

GO NATIVE!

VAX™

Accounts Payable • Accounts Receivable • Job Costing
General Ledger & Financial Reporting • Inventory Control
Order Entry • Payroll • Client Write-up • Fixed Asset Accounting
End Users • OEM's • TimeShare

CTS-300 CTS-500

Native Mode · Auto Restart After System Crash
Fully Integrated · Tailorable · Menu Driven
Interactive · Thoroughly Tested · Multi-User

Compu-Share

Compu-Share, Inc. 3824 - 50th Street Lubbock, Texas 79413 (806) 792-3785

VAX is a trademark of Digital Equipment Corporation

The Cost Picture

Computer conferencing software comes in a variety of packages at a variety of prices and pricing methods. EIES costs rise steeply with each user added, for example, while in other systems the cost per user will decline with each new member. Some typical prices are included with the system descriptions that begin on In Depth/7.

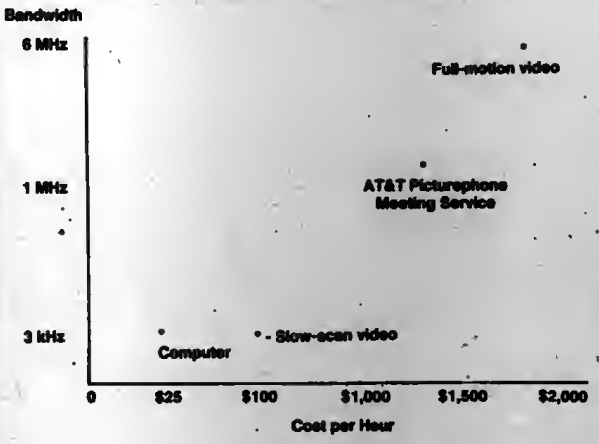
Beyond the cost of the software itself, communications charges obviously account for a large chunk of conferencing costs. One determinant of communications costs is channel bandwidth when comparing computer conferencing to video or audio conferencing. Computer conferencing systems will operate over normal telephone lines at 4 kHz, whereas full-motion video conferencing, for instance, needs 6 MHz (see figure below).

The labor cost of using various channels of communications may also be considered. The cost of an average business letter is now $7.11, up 7.2% over the 1981 cost, according to a survey conducted by the Dartnell Institute of Business Research, Chicago. The price of $14.22 per ounce for a business letter makes such correspondence more valuable than silver in today's market. By the same standards, a message sent electronically costs about $1. The key difference is that unproductive labor, paper costs and sender's time have been reduced substantially.

Another study has calculated the cost of each successful telephone call to be $12.92. And U.S. companies now spend $21 billion yearly for travel; one research firm states that 15% of that figure, more than $3 billion, could be saved by the use of telecommunications and teleconferencing.

In short, computer conferencing costs the price of a terminal ($500-plus), a communications modem ($100-plus) and an account with one of the companies that provides such a service, which starts at $50 one-time and $25 per hour but ranges higher depending on the company. Prices for an in-house system start at around $15,000, or $1,000 per month on a rental.

For some companies, conferencing can make sense as a way to get more mileage out of hardware that is already in place, such as terminals, computers, processors and communications equipment.



familiarity with computers or preference for speech over written communications, but *attitude*. The people who used the system most and professed to get the most out of it were those who anticipated that they would like using EIES before they ever came on-line. They proved to be the people who already knew other on-line participants and therefore already had some community of interest.

Specifically, computer conferees have found that such a communications system can:

- Reduce greatly the need for unnecessary travel, saving time and expense.
- Break the habit of meeting and encourage true dialogue to accomplish more in much less time.
- Allow issues to be dealt with when they arise, thereby increasing the speed, quality and effectiveness of decision-making.
- Improve the quality and quantity of consensus among project participants.

Since businesses are almost by definition communities of interest, the study indicates that the adaptation to written computer conferencing may not be so difficult as popular wisdom suggests. The quick acceptance of

electronic mail systems supports this conclusion. Electronic mail is really a subset of computer conferencing.

In the future, computer conferencing will grow because of added capabilities, such as financial modeling, decision support systems and artificial intelligence. The same executives who have taken Visicalc to their hearts will find computer conferencing an elegant way of integrating their work with that of others.

Product Roundup

Augment

Strictly speaking, Augment is not a conferencing system; it is more extensive — a complete package for the joint processing of computer-generated text and graphics. Developed under Douglas Engelbart at the Stanford Research Institute in the 1960s, when it was known as NLS (for oN-Line System), Augment became the kernel of the worldwide Arpanet. Its structure is still used by thousands of Arpanet users who may have nothing to do with the commercial system now marketed by Tymshare, Inc.

The designer's intent was to build a system that would make a computer terminal into a tool to "augment" the human intellect much as the invention of writing did in providing a form for storing, retrieving and manipulating text. Tymshare markets the system as an "electronic briefcase" with which text can be written, edited, formatted, filed and distributed.

As one might suspect, this system is not simple. It is, in fact, anything but user-friendly, having no real conferencing front end, and requires much practice to operate with any kind of skill. Almost without exception, veteran users say that learning is worth the trouble. Properly used, Augment permits text to be manipulated almost at will, from creation to production of a finished document — printed, if the user wishes, in four colors.

Augment operates in a whole system of documents, at all stages from composition to final display, and may be used collaboratively. It is as a collaborative tool that Augment displays its real power, and that is why it belongs in a discussion of computer conferencing. However, where most conferencing systems are organized around communications requirements, Augment is based on text and who can use it. Rather than organizing text according to formal conferences, Augment permits various levels of file protection and user group definition that permit flexible methods of cooperative effort.

All files are kept in a vast seamless "journal" that may be accessed according to a user's predefined rights. Changes in text are logged by the system, which keeps several versions on file, noting who is responsible for each.

In its synchronous mode, Augment permits users to view as many as eight files simultaneously, passing control back and forth and "pointing" via a cursor to particular portions.

A messaging subsystem provides electronic mail service, and users are notified of new messages as they arrive.

Like newspaper editing systems, but unlike most general-purpose text editors, Augment recognizes text in logical elements, rather than as fragments of the particular text display system. That is, the system sees sentences or paragraphs, not "lines." Each text element is related to the others according to a user-assigned level: for example, the topic sentence of each paragraph may be on one level and the rest of the paragraph on a lower level. In turn, the paragraphs may be related to higher-level sections.

In all, Augment recognizes six different levels of text. By choosing to view only certain levels, the user may therefore review text through "filters" that are as coarse or fine as the situation requires. A user can scan text and "zoom In" for more detailed information at will.

Augment includes a calculator, a sort function, graphics (with a Tektronix, Inc. 4014-type terminal) and various print functions. It may also be used to create forms.

Accessed via Tymnet, Augment may be used with any Ascii terminal,

Some data security methods work better than others.

TOP SECRET the state-of-the-art resource protection package for MVS works best of all.

TOP SECRET is data security at its best. Offering quick installation, phased implementation and comprehensive resource protection, TOP SECRET outdistances all other data security methods for total resource protection.

TOP SECRET immediately secures your most critical resources without impacting normal processing. Implement security with no delay and with absolutely no modifications to your operating system.

TOP SECRET is the only total resource protection package that offers comprehensive CICS security, including file and program control and protection down to the field level.

By using the Standard MVS Security Interface, TOP SECRET becomes an integral part of your operating system. Complete compatibility with all IBM and vendor products that use Standard Security is automatic and guaranteed, now and in the future.

TOP SECRET security comes with the same top-notch technical support that guarantees the quality and reliability of all CGA software products.

Protect your valuable data resources today. Join the MVS sites across the country that have considered every data security method and made the sure TOP SECRET choice.

Call for additional product information and your free trial.

800-543-7583.
In Ohio, call collect
(513) 890-1200.

cga
Software Products Group, Inc.

212 West National Road
Vandalia, OH 45377

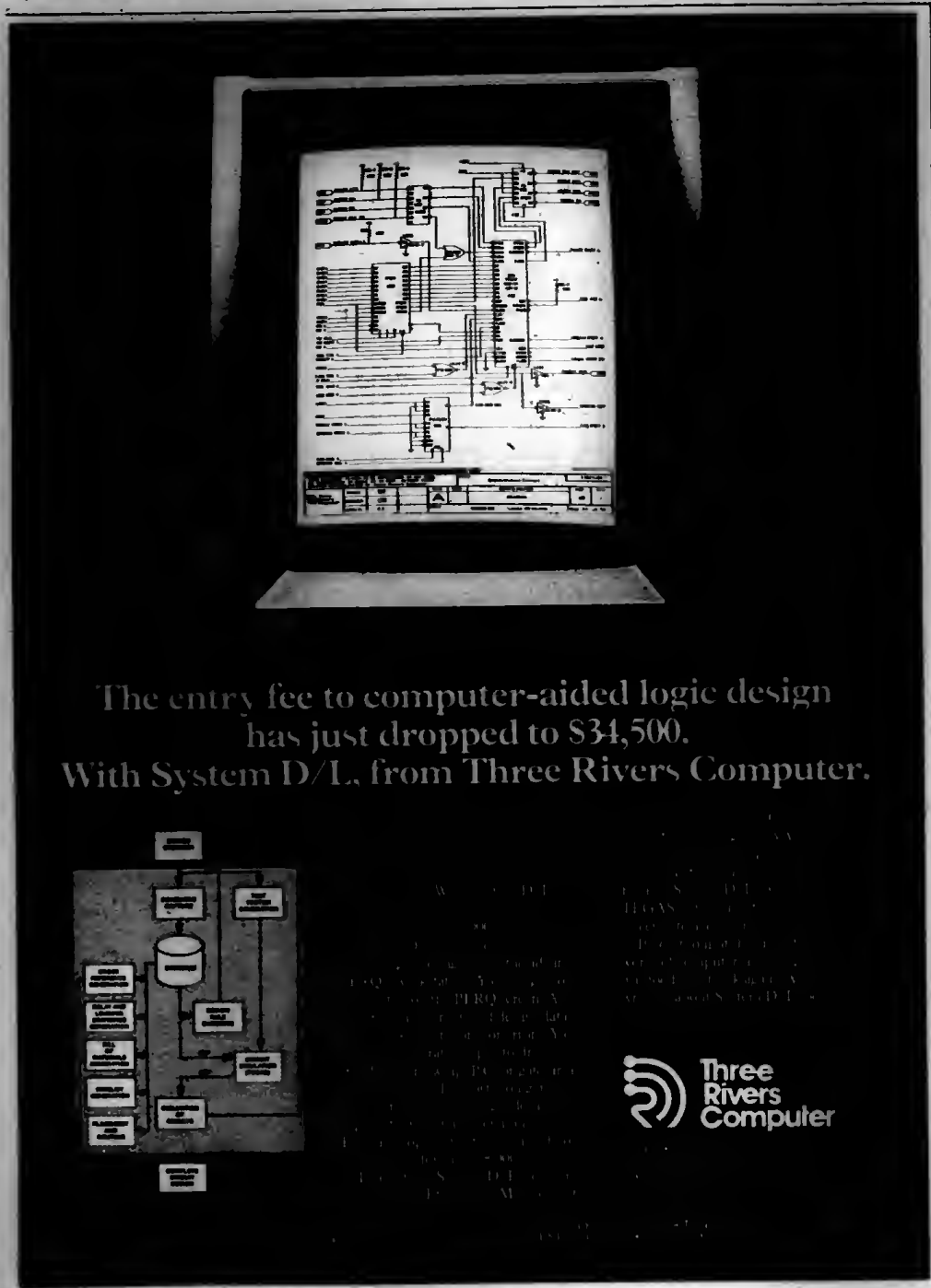
IN DEPTH

but for fullest use of the system, Tymshare recommends its own terminal, which has been modified to accept directions from two I/O tools that supplement the normal keyboard. One is a "mouse" that permits the user to move the cursor around the screen quickly in any direction, without the awkward time-consuming arrow keys required by most systems. The mouse is a small device that rolls around a table top and generates error voltages that the terminal turns into X-Y coordinates on the screen.

The other device is a five-key chord set, similar to a court reporter's stenotype machine, that enters characters through binary code. Pressed two at a time, the keys allow the entry of 31 different Ascii characters. (The "zero" entry, being no keys at all, cannot generate a character.) With a shift and supershift button on the mouse, the total number of characters is increased to 93. Skilled users operate the chord-and-mouse set to enter commands, reserving the keyboard for entry of long strings of text.

Tymshare markets Augment to Fortune 1000 companies, government agencies and "anyone who wants to augment professional activity." The system is specifically targeted at professional information workers; it is not a secretarial tool. The cost is based on Tymnet access charges and averages $14 to $18/hour, depending on how the buyer uses the system. The special terminal may be leased from Tymshare at $200/mo. Tymshare will also sell the software for installation on a user's host (a Digital Equipment Corp. system running Tops-20).

Tymshare is at 20705 Valley Green Drive, Cupertino, Calif. 95014; (408) 446-6000.



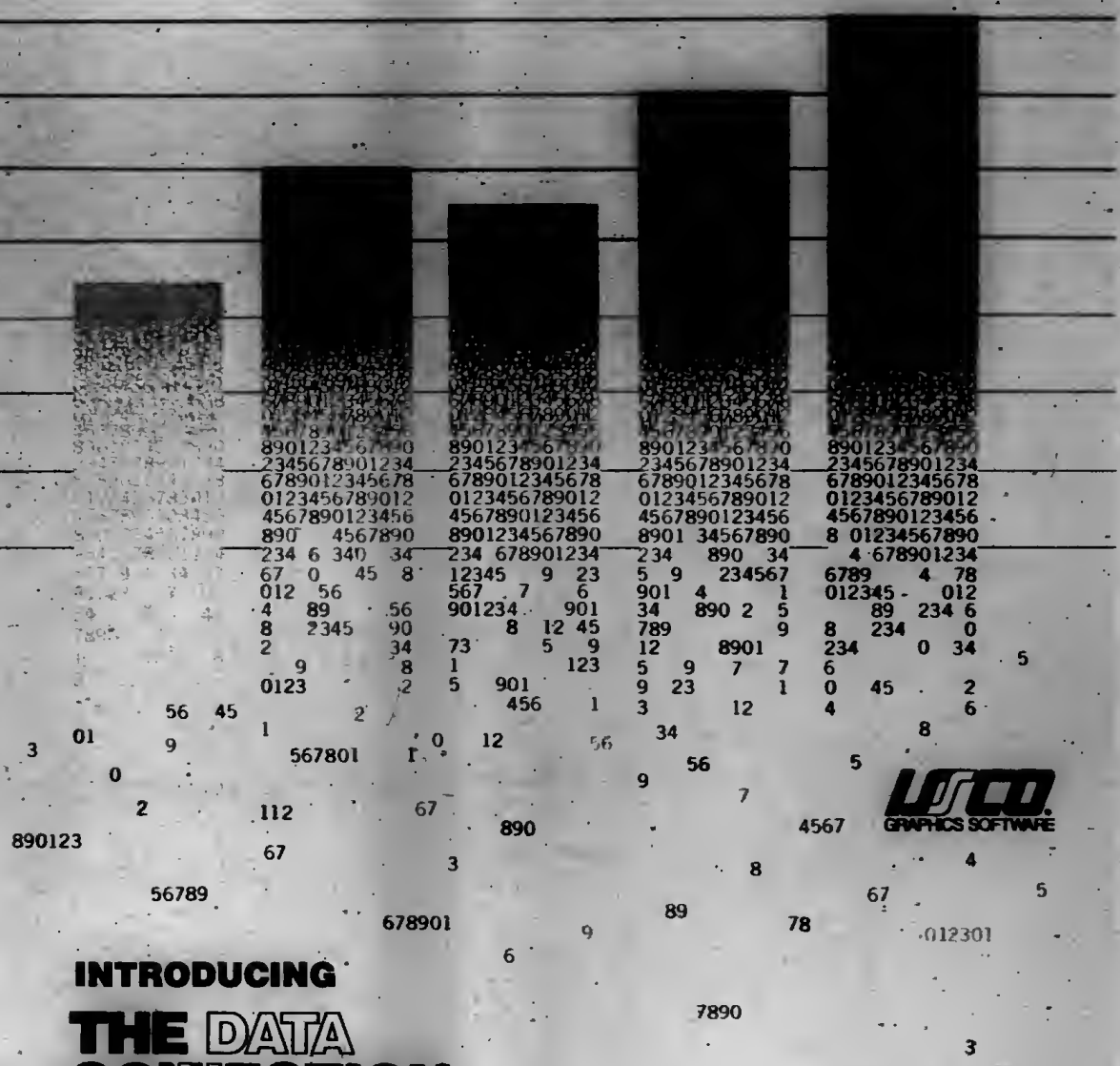
Notepad

Designed by Dr. Jacques Vallee, one of the pioneers in conferencing research, Notepad provides messaging, both synchronous and asynchronous conferencing, keyword searching and graphics. Yet, beginners can learn all essential features in a matter of hours.

The key is in Notepad's menu structure, which turns a keyboard's numeric pad into a set of function keys. Any menu system performs this trick, but Notepad makes it obvious. Users are provided with a color-coded function card that fits over the number keys. In command mode, these keys become entry points into Notepad's various subsystems.

The systems are partitioned so that the user may write or read private messages, choose a conference, write or read conference items, edit or otherwise manipulate text files. The user may access special Notepad features such as graphics, communications from an off-line word processor or on-line help.

Within the subsystems, additional menus list further user options. A carriage return takes the user back to the original command mode to switch to another subsystem. Notepad's text editor is rudimentary, being line-oriented rather than screen-oriented, but this drawback is mitigated by the system's



ISSCO GRAPHICS SOFTWARE

INTRODUCING THE DATA CONNECTION.

The final link to complete computer graphics

DISSPLA® device independence 1969; design flexibility 1974; TELL-A-GRAF® ease of use 1978; graphic-artist quality 1980; CUECHART™ 1982.

Now, ISSCO-quality graphics enters the mainstream of data processing with THE DATA CONNECTION—a TELL-A-GRAF graphics-software link that provides both easy access to data and data manipulation for graphic presentation.

THE DATA CONNECTION and TELL-A-GRAF combine the industry's most advanced presentation-graphics software with direct paths to virtually all business and scientific data sources—for display in graphics format for fast understanding, better decision making, and maximum impact.

With THE DATA CONNECTION you can:

- Connect ISSCO graphics to all data, wherever it may be stored.
- Select appropriate data; exclude what is irrelevant.
- Extract data from both standard and non-standard files.
- Read tabular data from printer reports stored in any format.
- Accept data from application programs at data-generation time.
- Arrange data for maximum graphics impact.
- Organize, accumulate, summarize, tabulate.
- Perform mathematical analysis for decision support.
- Edit, store, retrieve and periodically update.

Shouldn't you have complete computer graphics? Call or write ISSCO—the industry leader in graphics software for more than a decade.

ISSCO, 10505 Sorrento Valley Road, San Diego, California 92121 (714) 452-0170

IN DEPTH

easy method of accepting text that has been prepared and edited off-line.

Notepad is operated by Infomedia Corp., a company headed by Vallee. Most Infomedia clients access Notepad via Tymnet at up to 1,200 bit/sec and use the software resident on the host at the company's San Bruno, Calif., headquarters. Infomedia charges a $1,000 startup fee and then $60/hour, plus $7/hour for Tymnet. Discounts are available for long-term commitments. Within an account, a user may establish as many projects as required and within each project as many conferences (called "activities") as required.

To set up these projects and activities, Infomedia first consults with the user as to what specific applications are contemplated. Infomedia will train customers in the use of Notepad, and subsequently an Infomedia representative takes part in one of a customer's conferences to provide on-line assistance. (The customer still may maintain private conferences to which Infomedia does not have access. The charge for this assistance is limited to the actual connect costs for the Infomedia representative, $1/min).

Users have free use of 100 pages (approximately 2,500 characters per page) per month and pay $1/page/mo thereafter.

The system's principal use, Infomedia says, is for project management and for ongoing information exchange.

About 30 large organizations now use Notepad, including Bechtel Power Corp., Cities Service Co., Nasa's Ames Research Center and the Electric Power Research Institute. The Nuclear Safety Analysis Center in Palo Alto, Calif., installed Notepad to link all U.S. nuclear power plants following the Three Mile Island accident in 1979.

Infomedia will also sell the entire Notepad package, which will run on any DEC computer supporting the Tops-20 operating system. The price is $50,000. The company reportedly has tentative plans to introduce a version for IBM's VM/SP operating system.

Infomedia is at Suite 275, 801 Treaser Ave., San Bruno, Calif. 94066; (415) 952-4487.

Genie

A conferencing system called Genie (for GENeral Information Environment) is being marketed specifically for scientific and engineering applications by Data Dynamics, Inc. of Portland, Ore.

Designer Steve Heitman calls Genie a "value-added data base management system" that integrates text and data.

Genie incorporates communications, word and graphics processing, calendar and scheduling functions and a "personal information management" system. Its heart is a relational data base in which users may read and write. Conferences are called "repositories" and are organized by an administrator who has general editing functions. The system has screen-oriented word processing.

The full text of Genie files is searchable, though Data Dynamics also plans to add a bulletin-board function with a controlled vocabulary, which may be searched by keywords (a less sophisticated, but faster, process).

Genie has been in use for three years, during its development, by more than 300 users at a large Portland-area electronics company. The system, written in Pascal, operates on the Control Data Corp. Cyber 175. However, it is portable, according to Heitman, and will run on the Unix operating system. It requires 256K bytes of main memory.

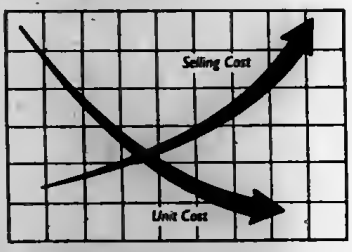
Data Dynamics sells the mainframe version for $65,000 and the smaller version, designed for a DEC VAX-11/780, for $35,000. The reason for the price differential, Heitman says, is that the VAX version will support fewer users. New users may test the system on a Data Dynamics host for $5,000/mo over a three-month period.

The scientific/engineering market is not as large as the business market, Heitman concedes — but, he says, its members are higher on the learning curve and more likely to be capable

HALT...RESET

MARKETING PRODUCTIVITY IS THREATENED.

As your products decline in price... and your cost to sell rises. As your products become more sophisticated... and your prospects increase... You need *"real-time interaction, with real-time buyers."* You need a permanent market place.



MEETING THE MARKETING CHALLENGE.

Helping you meet this challenge — The Dallas Market Center — with over thirty years experience in bringing buyers and sellers together – provides you a new facility — The INFOMART.

The INFOMART... *The International Information Processing Market Center*... is a medium

designed to meet today's marketing challenges. We envelope the economies of scale to help you improve productivity and maintain organizational profits. We will host and sponsor frequent on-site trade shows and seminars. We will execute concentrated media campaigns promoting The INFOMART with our full-time staff of public relations and advertising specialists.

Plan today to explore this new marketing technique to reach, educate and service your prospects and customers... For your detailed plans on our concept and what we can do for you contact:

Bill Winsor
INFOMART
Dallas Market Center
2100 Stemmons Freeway
Dallas, Texas 75207
214-655-6235

INFOMART

DALLAS MARKET CENTER

The Information Center

Theirs:

QBE, GIS, STAIRS, APL, ADRS, SQL, Etc...

Ours:

INQUIRE®

See us at Software Expo/Chicago Booth #357

Help users help themselves. That's the idea behind IBM's Information Center, where the data processing department will provide and maintain tools to allow users to retrieve, analyze, manipulate and present data (including textual material) more effectively.

They've got the right idea, but the wrong tools.

When productivity is all-important, why buy, learn, and support a hodgepodge of ever-changing systems in your Information Center?

With a single non-procedural lan- [illegible] easily [illegible] in a few hours, [illegible] productivity, [illegible] productivity, [illegible] support the entire [illegible] process.

[illegible] of

We've been helping companies establish information centers since 1968. Call us toll-free today to find out how.

INFORMATION CENTER SEMINAR

October 4, 1982 — Boston
October 5, 1982 — New York City
October 6, 1982 — Somerset, NJ
November 1, 1982 — Chicago

Infodata

Infodata Systems Inc.
5205 Leesburg Pike
Falls Church, Virginia 22041
800-336-4880
In [illegible] 703-578-3430
Offices in
[illegible] New [illegible]
[illegible] Louis, [illegible]

IN DEPTH

of using sophisticated systems.

Genie offers sophisticated directory management and multiple user interfaces. It has a "help" system that may be tailored to a user's level of expertise. It is compatible with X.25, Decnet and Hyperchannel communications protocols, as well as telephone packet-switched nets. Its communications software supports the routing of memos and questionnaire functions as well as electronic mail and conferencing.

Data Dynamics can be reached through Box 5517, Portland, Ore. 97228; (503) 286-3174.

EIES

The Electronic Information Exchange System (EIES) network, operated by the New Jersey Institute of Technology under the direction of Prof. Murray Turoff, can provide a convenient test bed for companies wishing to experiment with computer conferencing.

Turoff, with EIES cofounder Starr Roxanne Hiltz, wrote *The Network Nation* (Addison-Wesley, 1978) and is one of the most knowledgeable experts on computer conferencing's capabilities and potentials. EIES has a large population of on-line sociologists and computer scientists who have studied the system extensively; their reports are available on-line. Users are occasionally asked to participate in such studies, though compliance is voluntary and confidentiality is promised.

EIES offers so many conferencing features that beginners may feel overwhelmed. Yet, the system works perfectly well with a small subset of these features, and new users quickly learn to find their way around.

They are helped by a set of tree-structured menus and the on-line presence of a "user consultant" — an experienced EIES user who will provide a quick response to queries. There is normally at least one user consultant on-line at all times, and a system monitor is always available for help.

Equally useful to companies evaluating computer conferencing as an operational mode is the system's elaborate monitoring software. EIES tracks user activity meticulously. Membera always have available to them on-line, monthly and cumulative totals of time on-line and messages and conference items composed and read.

Since EIES supports a variety of usage patterns (simple messaging, conferencing, private and group notebooks and so on), companies may experiment and then track usage to see which approach offers the best trade-off between costs and user acceptance.

More so than most conferencing systems, EIES is a true community, with an on-line newsletter to alert members to activities on the system that may be of interest to them. Nevertheless, EIES welcomes corporate users, and their conferences may be totally private. Under some circumstances, companies may even protect their members from receiving messages from outsidera.

A private "conference" on EIES is simply a set of files accessible only by specific users. Access is provided by a moderator, who has wide freedom to add and delete membera and to modify text. The files themselves are numbered consecutively, dated and given keywords; they may be associated with another file if the user wishes. They are normally signed automatically by the system, but may also be displayed anonymously or under a pseudonym. (Messages may be addressed to pen names.)

Any of these tags may be used to search for a particular file. To save time, many conference moderators maintain an index of comments in a separate file.

Usera write text into EIES in temporary "scratchpad" files. Once the material is in satisfactory form, it may then be stored in the appropriate notebooks or conferences or sent as a message.

The mechanisms for performing these electronic manipulations are tailored to the user's level of sophistication. Neophytes are stepped through a series of menus. Once they gain some familiarity with the system, they may suppress the menus and merely type in answers to system prompts. The next step is to "an-

"Business Week's editorial focus and our advertising objectives go together very well."

Powerful, direct-influence medium. Broad, top-level management reach. Exclusive computer/high-tech coverage every week. ABC-leading circulation. Award-winning editorial environment. Targeted high-tech purchasing audience.

There are many reasons Business Week is the overwhelming leader in computer advertising among top general, news and business publications.

And recently, in a TV commercial for Business Week, Hewlett-Packard's John Young spoke openly, without a script, about his company's 10-year-plus relationship with Business Week.

If you're looking for the most powerful advertising vehicle you can get for your computer advertising dollars, Mr. Young's comments just might interest you:

"As Hewlett-Packard moved from being one of the world's leaders in electronic instrumentation into office computers, we needed to address the management and professional business community."

"Based on our measurement program, we've seen that our recognition has grown significantly over the years, and we can correlate this directly with our advertising program in Business Week."

"Business Week is the mainstay of our print advertising campaign."

Maybe it's time you looked into one of the world's most powerful advertising vehicles. Call your Business Week representative for a complete computer-customer profile.

BusinessWeek
The world's leading business magazine.

©1982 McGraw-Hill, Inc.

IN DEPTH

swer ahead" with a whole string of commands that anticipate the prompts. Experts can create their own macro commands for frequently used functions from the EIES programming language, Interact. A fifth command level permits the user to bypass the system's tree structure and move directly from one subsystem to another.

EIES keeps track of who has seen what text. Messages are automatically acknowledged so that a sender always knows when a message has been received. (Recipients need not accept messages, but they will be offered them automatically at each log-on until they do.) A "marker" is kept for each member of a conference, so authors can check to see who has or has not seen a given comment. Users can, however, reset their own markers in order to bypass comments if they get too far behind.

EIES is accessed via the Telenet or Uninet packet-switched networks or by direct dial to its Newark, N.J., headquarters. It offers a variety of pricing structures; the basic Class 1 account costs $75/mo, with users being billed for Telenet ($9/hour as of July 1) or Uninet ($7/hour) charges. EIES headquarters is located at 323 High St., Newark, N.J. 07102; (201) 645-5503.

MTX (Matrix Transaction Exchange)

Matrix is a second-generation conferencing system created by Cross Information Co. It resulted from research into management information network development.

Matrix features include unlimited conferencing, discussion and user memo "yellow pad" capability, management reports, mail/bulletin board, on-line "help," low memory requirement, a multiuser environment and complete system management via menus (tree-structured).

Matrix's innovation lies in the administration over the entire system. With menu-driven functions for the Matrix system operator, conference manager and discussion leader and user functions, the system was designed for management control in corporate organizations. Each of these functions allows certain privileges for conference management and administrative activities as well as extensive report generation. Each of these functions is accomplished through use of only the number keys. Managers can work with and manage Matrix without typing skills.

A directory function provides a range of information on such topics as conferences, discussions, memos, leaders, managers and messages. With on-line "help," instructions and training conferences, rapid learning is possible.

A meeting status indicator lets each person know where the meeting is and what has occurred and even go back to the very first meeting, if necessary. At any point in the meeting, the user can review everything that has already transpired. In addition, he can go back to the very first meeting or any one in between for reference.

Matrix supports a range of communications from small project groups or large multinational organizations. The package can be integrated with other applications software residing on the computer system.

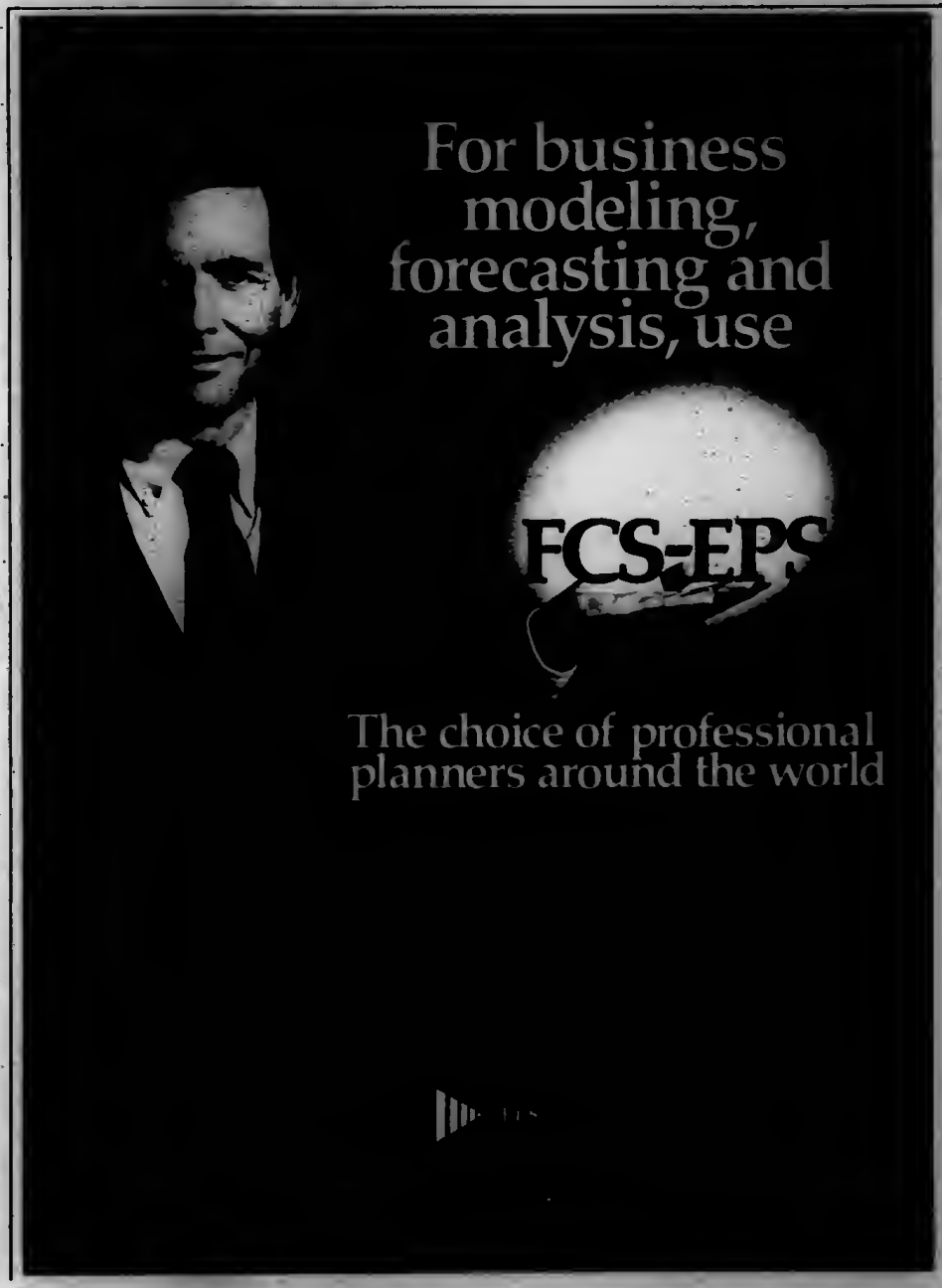
Conferences can be arranged for small to extremely large groups. In addition, conferences can be arranged for individuals, which provides for an unlimited "electronic file cabinet." The package features user-determined keywords as well as open searching. Increasingly, organizations are extended over long distances throughout the world. Parts are collected from the four corners of the world, assembled and shipped internationally.

Matrix was designed to be used in these emerging multinational operations.

Matrix recently won the Outstanding Information Technology Award from the Associated Information Managers of Washington, D.C.

Matrix prices start at $1,000 for monthly lease installed in-house for DEC systems. Matrix is also available as a modular system designed to interface with other existing computer programs.

Cross Information Co. also provides Matrix on a time-sharing communications service for $25 per hour in-



IN DEPTH

cluding GTE Telenet charges and a $50 one-time membership fee.

Cross Information Co. is located at Suite B, 934 Pearl Mall, Boulder, Colo. 80302; (303) 499-8888.

Conferencing In Action

The organizing committee for last spring's Office Automation show in San Francisco used Infomedia's Notepad system to integrate the task of putting the show together. The giant Bechtel Corp. also uses Notepad on a dozen construction projects, and more than 600 Procter and Gamble engineers use the Confer system to coordinate their work.

Among other conferencing users, the Joint Electron Device Engineering Councils of the IEEE have used the EIES network to develop hardware and software standards for solid-state devices. Tymshare operates a huge conferencing network, called VNET, for IBM. Einar Stefferud, a Huntington Beach, Calif., office automation expert, works with his defense department clients over the Arpanet.

The following are some case studies of how computer conferencing may be used in both large and small applications.

Nuclear Notepad

One direct result of the nuclear accident at Three Mile Island in 1979 has been the linking of every nuclear power plant in the U.S. and many abroad by a computer conferencing system.

The special commission that investigated Three Mile Island, under the direction of then Dartmouth College President John Kemeny — known previously as the guiding spirit behind the Basic programming language — recommended that the nuclear power industry form an international committee for the exchange of information on plant operation.

The industry chipped in to fund and staff the Institute of Nuclear Power Operators. The institute, based in Atlanta, decided to coordinate its operations via the Notepad conferencing system.

There are now 400 individuals from 100 organizations taking part in every one of the 65 U.S. utility companies licensed to build or operate nuclear plants, plus four vendors of reactor cores; eight architectural/engineering firms that design plants; and utilities organizations in Canada, Mexico, Taiwan, Japan, Spain, France, Sweden, Germany and Italy. Utilities in Brazil and Korea will soon join.

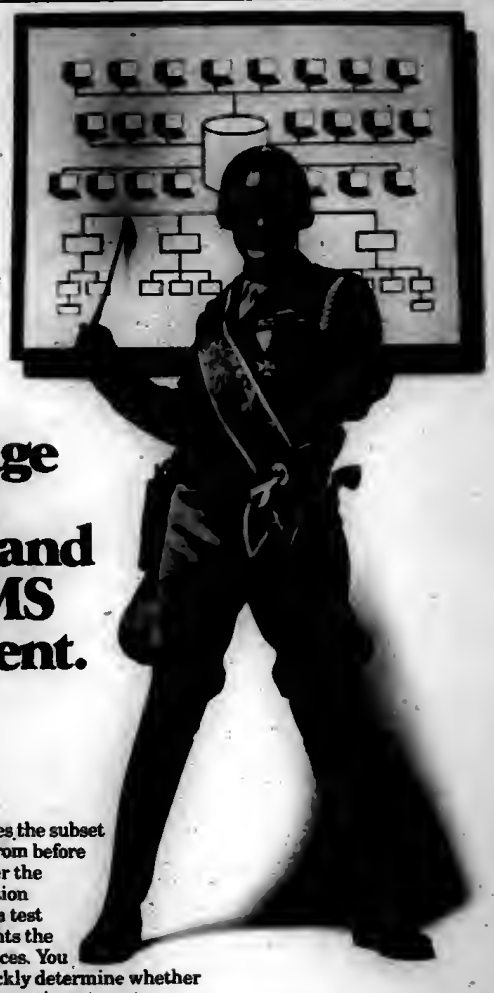
Notepad was chosen as the conferencing medium because it was one of the few such systems available at the time, according to Ron Simard of the institute's communications section. It was already in use by the Electric Power Research Institute, some of whose members are also in the nuclear group. It also had the benefit of being easy for unskilled personnel to use.

At any given time, the institute coordinates 20 to 25 separate conferences on various aspects of nuclear plant operation. One, for instance, focuses on licensing activities of plants under construction. Another concerns radiological information bearing on health problems. One conference exists for the reporting of what the industry calls "unusual events" bearing on safety. For example, if engineers at one plant find that leaving a certain valve open leads to a potentially dangerous situation, they can alert others to the problem. The valve failure that crashed Three Mile Island had already occurred, with less serious results, in a Toledo plant.

There is one "hotline conference" that deals with emergencies. It has been used only once.

The conference users come from both top and middle management, according to Simard. At nuclear power plants, the users are the plant managers, who normally delegate the task to secretaries. Users at corporate headquarters tend to be mid-level engineers, who go on-line in person. Direct participants are more active conference members, Simard says.

In general, usage reflects individual



DataVantage lets you take command of your IMS environment.

DataVantage is a Data Base Administrator's best strategy for managing the IMS environment. With it, you can plan on simple creation and control of test data bases for faster, more dependable application development.

With one command, DataVantage creates a subset of your production data base. All testing is done on copies of this subset, protecting your production data base from assault. And each programmer has their own copy, which is secure from the actions of the other programmers.

DataVantage assures rigorous and thorough testing. The subsets are accurate samples of the production data base, so they exercise all program logic. And DataVantage adds the discipline of quality control to testing. It compares the subset copies from before and after the application program test and prints the differences. You can quickly determine whether the program is on target.

Most important, you'll have total control of the test data base environment. DataVantage stores all programmers' versions in one central place. So you won't have the troops scattering test data bases throughout the system where they can be lost or destroyed.

Mobilize the full force of IMS data bases. Contact On-Line Software International for more information about DataVantage, the DBA's secret weapon.

ON-LINE SOFTWARE INTERNATIONAL
Fort Lee Executive Park,
Two Executive Drive, Fort Lee,
NJ 07024 • (201) 592-0009
Toll Free (800) 526-0272

corporate philosophy. One Midwestern utility, for instance, keeps all conferencing activity centered at corporate headquarters and funnels information and queries to its plants by regular company channels. Other companies allow complete freedom of access.

Simard says the system is strongest in bringing about the widespread, timely dissemination of information and in making that information easily retrievable by members (through Notepad's search procedures). It is weakest, he says, in eliciting answers to specific queries.

Even so, he adds, most members log on at least once daily, and users have the benefit of knowing that requests for help will be seen immediately by the entire worldwide membership.

Writing by Committee

Preparing a document from the contributions of a number of widely scattered individuals is an exercise in logistics in which the most important variable — the availability of the participants — cannot be controlled. Faced with this problem, Joseph P. Martino of the University of Dayton stitched together a conferencing system from available computer software and turned out in three weeks a contract proposal that otherwise, he says, would have taken months to write.

Computer conferencing was a natural medium for Martino since the proposal itself concerned support for an experiment with computer conferencing in higher education. The experiment was designed by the university's computer science department, carried out by the engineering department, evaluated in the School of Education and sociology department and managed by Martino's research department.

"I knew I would never get the 11 people involved together in the same room at once, let alone regularly," Martino says. Therefore, he decided to use the electronic mail system on the university's VAX computer.

Martino put an outline of the proposal into a VAX file, then messaged questions about it to the various departments.

Using the replies, he began writing drafts of the sections, incorporating the material sent in response to his messages.

The others then commented on the drafts in separate files. Succeeding versions were also stored on-line and dated so that different versions could be compared.

"The proposal was really a joint effort," Martino says. "Everyone on the team made significant contributions and interacted with everyone else. It wasn't as though we asked each person to write a portion of the proposal, then simply pasted the independently written pieces together. We had the kind of objections, suggestions, revisions and so on that would have taken place in a more conventional committee.

"The striking aspect of the activity is that we got it done so quickly. Each member was able to take part on his own schedule. For all practical purposes, we conducted a continuous, month-long committee meeting," Martino remarked.

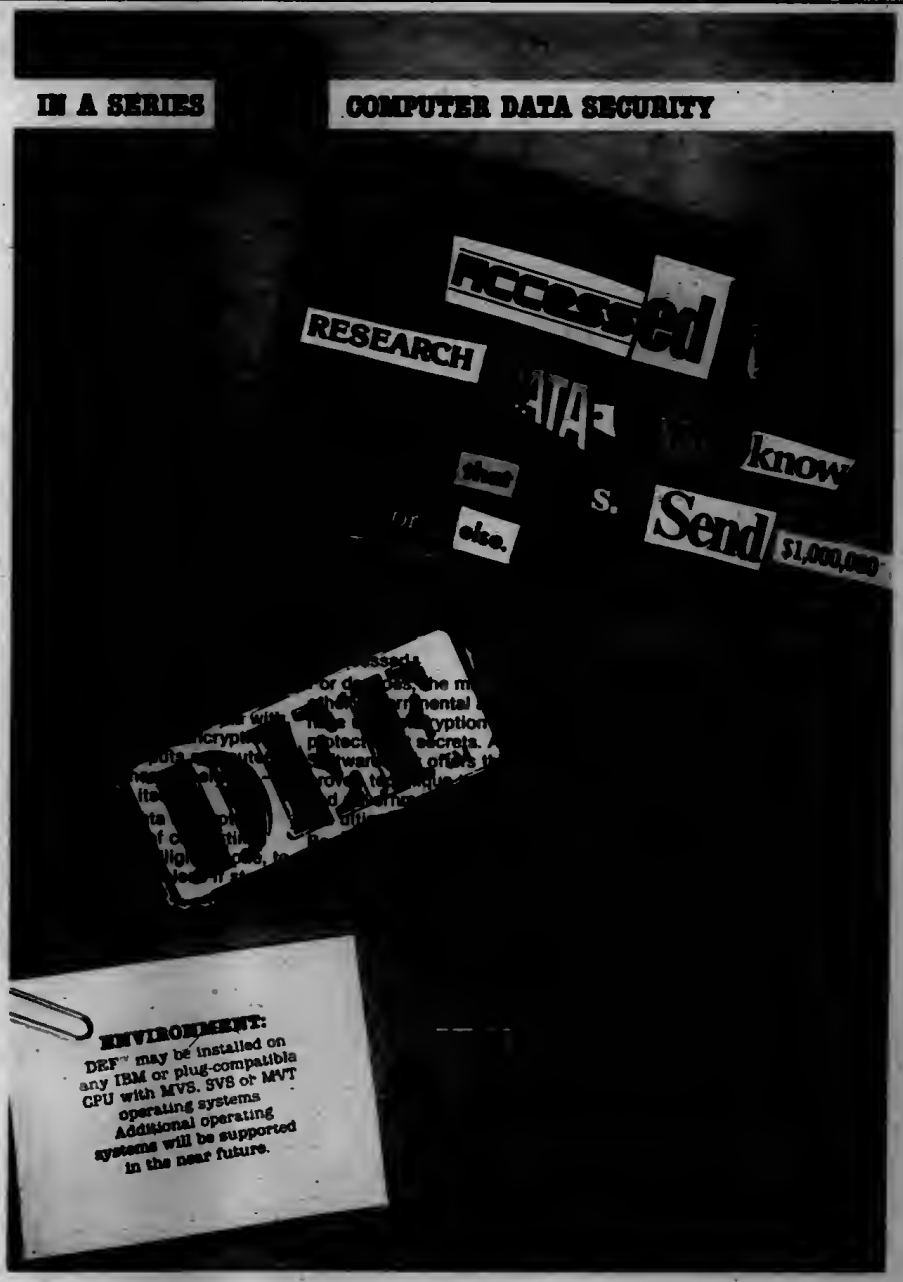
Martino notes that he went into the experiment expecting it to work well and that the other members were highly motivated to complete the project.

"Computer conferencing cannot substitute for motivation, but it can provide a convenient means for collaboration among people who would otherwise find it difficult to meet to carry out joint activity," Martino says.

Teaching on the Network

A two-year course in advanced management concepts may sound like an expensive luxury to executives who cannot justify spending so much time away from their jobs, however promising the benefits. But as taught by the Western Behavioral Sciences Institute (WBSI) in La Jolla, Calif., the course entails a minimum of work time, since it is conducted as a computer conference.

Equipped with terminals and accounts on the EIES conferencing system, members of the course take part at times and places of their own choosing. They take part in group discussions and decision games and query both the faculty and each oth-



IN DEPTH

er. There is no need for note-taking, since all material presented is always available to any member.

The course started last January. The members, almost all of them hunt-and-peck typists, spend an average of 13 hours a month on-line, and there have been no dropouts, according to Darrell Icenogle, the institute's director of educational resources.

The course began with an eight-day training session at La Jolla. The content and purpose of the course — which stresses interpretive management processes and the role of value systems — were established, and the members were trained in the use of EIES.

Then, armed with a simplified version of the EIES documentation compiled by Icenogle, the executives returned to their desks and began their asynchronous participation in the course.

The beauty of the program is that it uses the time executives have available, according to WBSI President Richard Farson.

The course is heavily moderated by WBSI faculty, a factor that Icenogle says is critical to its acceptance. Members responded favorably when the moderator took the time and trouble to index and summarize conference items; some even began making their own summaries of group discussions and offering them for inspection.

The result, Icenogle says, is that the conference developed a kind of "weaving" of the members' ideas that adds a new dimension to what would otherwise be a simple exchange of texts.

One spinoff from the course takes advantage of one of computer conferencing's major benefits: the creation of a continuous record in machine-readable form. This text may be edited and then printed for distribution to people not involved in the electronic conference. WBSI is editing the content of its management course into a textbook for wider distribution.

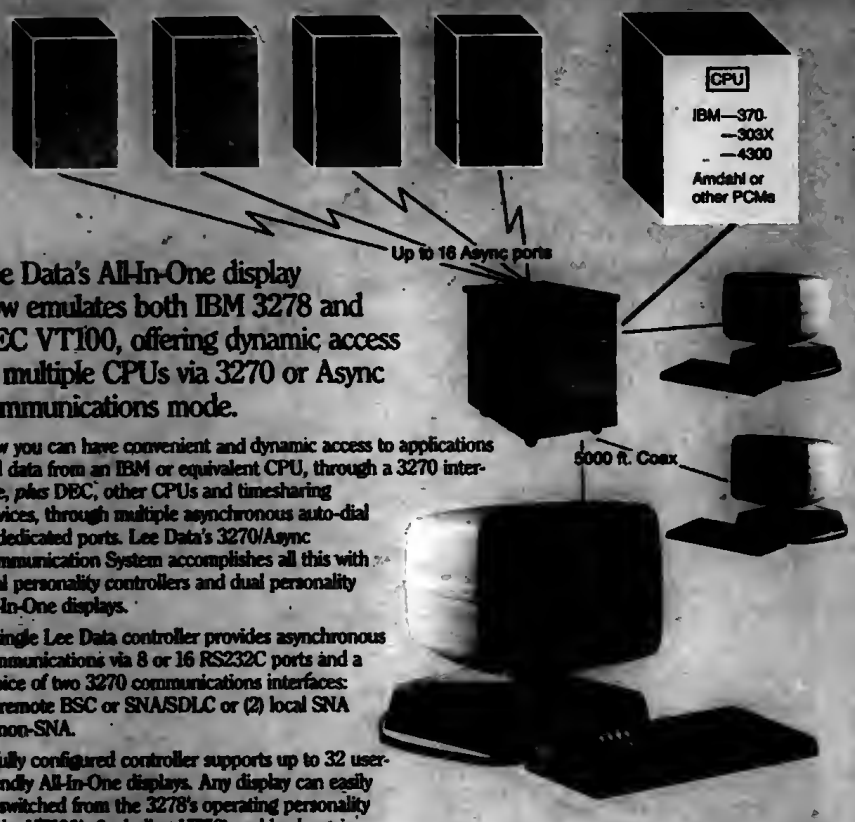
About the Authors

Clifford Barney is a journalist based in Berkeley, Calif., who covers computers and communications. He has written extensively about electronics in the trade press and is currently working on a book about computer information networks, which will be published next year by McGraw-Hill.

Thomas B. Cross is president of Cross Information Co. of Boulder, Colo. He teaches courses on office information systems at the University of Colorado and at Regis College and is writing a book on teleconferencing for Prentice-Hall. A corporate director who advises companies in high-growth areas, he developed the Matrix computer conferencing system.

3278 and VT 100 capabilities in one display

A reality with Lee Data's new 3270 plus Async systems



Lee Data's All-In-One display now emulates both IBM 3278 and DEC VT100, offering dynamic access to multiple CPUs via 3270 or Async communications mode.

Now you can have convenient and dynamic access to applications and data from an IBM or equivalent CPU, through a 3270 interface, *plus* DEC, other CPUs and timesharing services, through multiple asynchronous auto-dial or dedicated ports. Lee Data's 3270/Async Communication System accomplishes all this with dual personality controllers and dual personality All-In-One displays.

A single Lee Data controller provides asynchronous communications via 8 or 16 RS232C ports and a choice of two 3270 communications interfaces: (1) remote BSC or SNA/SDLC or (2) local SNA or non-SNA.

A fully configured controller supports up to 32 user-friendly All-In-One displays. Any display can easily be switched from the 3278's operating personality to the VT100's (including VT52) and back again. Also dynamically selectable are the All-In-One's four screen sizes—three 80 column and one 132 column—all available in the 3270 and Async modes.

As part of the 3270/Async system's 32-device complement, you may choose from a full line of Lee Data printers. These printers can be configured either as dedicated devices restricted to 3270 or Async applications or as shared devices dynamically assignable to either mode.

Discover what the reality of Lee Data's new 3270/Async Communication System can do for your company's terminal network.

10206 Crosstown Circle
Minneapolis, MN 55344
612/942-6300

LEE DATA CORPORATION

Call our system specialists toll free:
800/328-3998

Designers of innovative systems for the information worker

MAGNETIC TAPE SYSTEM FOR IBM SYSTEM/34

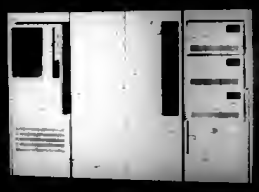
Connect communications adapter to rear of Tape System, load S/34 Utility Program, and begin processing.

Transmit and receive data from any IBM bisynchronous device

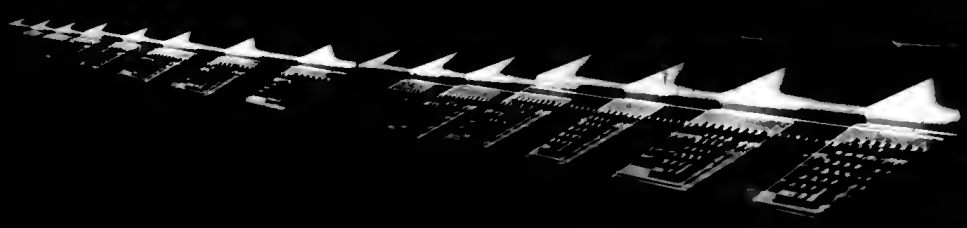
$18,500

GENERAL SYSTEMS CENTER, INC.
(516) 754-9140

SYNAPSE
TRANSACTION
PROCESSING.
IT DEALS WITH
THE FUTURE
YOU CAN'T PREDICT.



NOTHING ELSE GROWS LIKE IT.



AND NOTHING ELSE GOES LIKE IT.

INNOVATION TAKES CARE OF THE DATA AND USERS.

[illegible] systems.

[illegible] data loss.

[illegible] Companies [illegible] cash. And [illegible] data can be [illegible].

Or [illegible] in the real world things [illegible] happen that the programmers never [illegible] of. And [illegible] trouble.

Or, for that matter, lightning [illegible] power company transformer.

Or hardware can fail.

But if you've glanced at the next page you already know you don't have to worry from SYNAPSE N+1 hardware failures.

So let's deal with solutions you haven't heard of before.

With the SYNAPSE N+1 you have two ways to prevent keyboarding errors from threatening your data. First, the APPLICATION DICTIONARY™ facility results in a user-friendly screen that detects and points out potentially dangerous errors. And, as a backup, the Relational Data Base Management System (DBMS) [illegible].

[illegible] the transaction application model [illegible] along with our Relational DBMS, assure system recovery. The application-oriented [illegible] breaks an application into [illegible] that will [illegible] when a problem is detected. And the DBMS, for example, makes sure that everything needed for system recovery is always on [illegible] mirrored disks.

As for the lightning problem, only a standby generator can keep you running during the power failure. But after it's over, SYNTHESIS assures rapid recovery and integrity of the whole application and for all the users.

Now let's think about the [illegible] you never have to think about.

Always. The hardware.

AND THE HARDWARE TAKES CARE OF ITSELF.

[illegible] surprise [illegible] people in the computer business.

[illegible]

If that were the case, we would have called it a product like the SYNAPSE 2N. Instead, we called it SYNAPSE N+1. Because only one extra of each module type is required. In addition, if there are N+1 processors, then N of them can fail and not totally ruin your day. And it nothing's failed, the extra one works for you, improving the overall speed and efficiency of the application.

So if a minor component fails, the computer simply works around the problem. It re-routes work to the active components. Resulting, at worst, in a slight loss of speed following the failure. But never in a loss of anything else.

[illegible] suggest [illegible] Fault Active [illegible] component with a [illegible] percent [illegible] taking an application off.

Now, let's talk about the disks. We [illegible] just to allow [illegible] one to fail without throughput [illegible] ing. We're just the first [illegible] it's [illegible]

Before Synapse, if you wanted [illegible] the very small multiple drives to perform [illegible] reasons you had to double the number of drives to match that. The Synapse allows you to mirror just that file, so it will [illegible] one, just one drive. N+1 [illegible] In fact, if the critical files are small enough, we can show you how to save [illegible] with the N+1 system.

It's simple enough.

Because simplicity is the [illegible]

FEWER PROBLEMS GETTING ON-LINE.

[illegible] SYNAPSE [illegible]

[illegible]

[illegible]

[illegible]

[illegible] physical [illegible]

[illegible] APPLICATION DICTIONARY [illegible] forms and program [illegible]. The APPLICATION DICTIONARY is used by all components of SYNTHESIS. Relational DBMS [illegible] forms manager, transaction manager and even the OS. So an [illegible] X cannot be typed into a numeric field by an errant [illegible]. And if a program tries to write an [illegible] numeric field in the database [illegible]

[illegible] make sure the application will satisfy its users by not missing a trick. [illegible] transaction application model provides a top-down view for implementation. A view that starts with the objective [illegible] a group of tasks that may not [illegible] have it properly. So it literally [illegible]

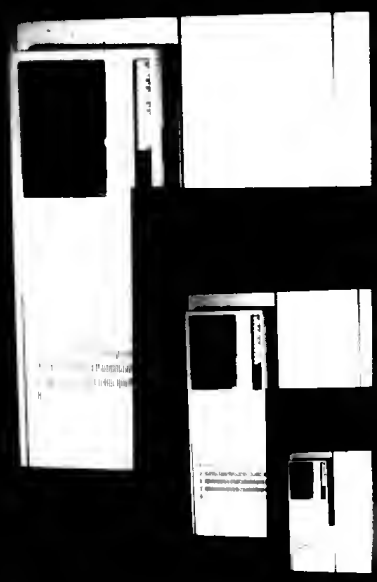
[illegible] SYNAPSE [illegible]

[illegible] standard COBOL [illegible] components and discussions [illegible] PASCAL [illegible]

Our approach [illegible] APPLICATION DICTIONARY [illegible] programming errors. So just as the SYNAPSE EXPANSION ARCHITECTURE minimizes risk in [illegible] development, all these advantages minimize risk and costs in the development situation.

Even the finest programmers make mistakes.

But with the SYNAPSE [illegible] they just have fewer opportunities.



FEWER HEADACHES ONCE YOU'RE RUNNING.

To keep the users lives simple SYNAPSE NX provides a fill in the forms operator interface. There are field by field error messages. Custom help screens available at the touch of a button. And a menu system that makes it easy to progress from one activity to another.

In fact users can suspend one activity, perform another, and then resume the first activity exactly where they left off.

To protect the system and the data Synapse provides complete access security in two layers. It controls who can log on and when they can log on and which terminals can perform which functions, and (2) it protects individual data base files from use by unauthorized persons or programs.

So if somebody wanted to access, say the payroll files—the system would require the correct and current user password *plus* the currently valid payroll-update program code.

[illegible]

[illegible] APPLICATION DICTIONARY [illegible] are on line as [illegible]

And SYNAPSE NX [illegible] ways as well. By [illegible] definition of a field for its [illegible] wide APPLICATION DICTIONARY will tell you—specifically—which [illegible] programs, relational files [illegible] affected.

Then there's the matter [illegible]

Synapse attaches top [illegible] priority to customer service.

Synapse fault tolerant system [illegible] time almost precludes the need [illegible] emergency responses. But in the [illegible] that your system becomes [illegible] our response will be immediate [illegible] of premium contract charges [illegible] emergency service.

So owing to the inherent reliability of the system we can devote our proper emphasis to customer applications support. Which contributes even further to lower life-cycle costs and improve the payback on your investment.

And yes it all does sound too [illegible] be true.

Unless you consider [illegible] the [illegible] of Wright.

If he'd really believed in his vision of future he'd have stayed put in Ohio. Pursuing his bicycle business, seeing nothing more on the horizon than a cycle built for two.

Luckily he assumed that anything could happen.

And now that SYNAPSE NX [illegible]

RUN THIS OFF ON YOUR COPIER AND MAIL IT. AND, YES, A SALES REPRESENTATIVE WILL CALL.

Mail to:
Synapse Computer Corporation
Corporate Communications Department
801 Buckeye Court
Milpitas, CA 95035.

Gentlemen.

Okay, I've seen the brochure. Now I'd like to see a detailed presentation on the SYNAPSE N+1

Name _____

Title _____ Phone _____

Company _____

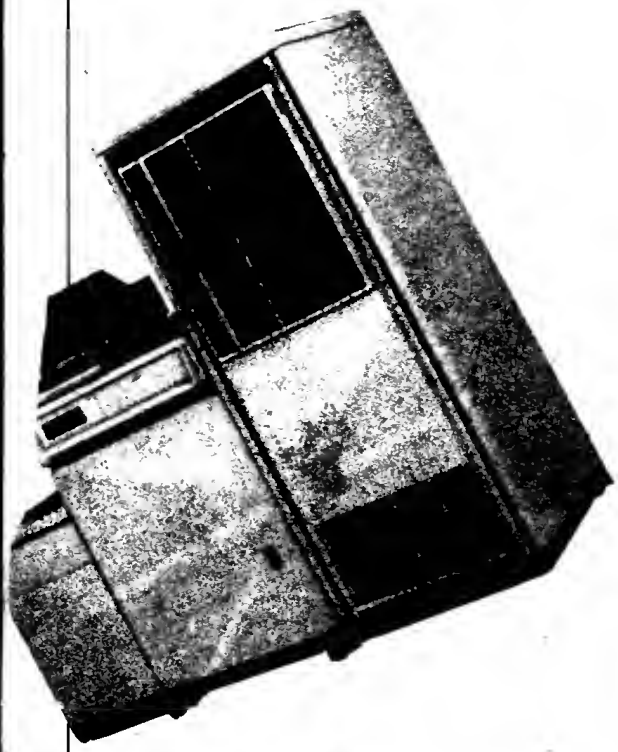
Address _____

City _____ State _____ Zip _____

Synapse

THINK AHEAD.

BALANCED COMPUTING



How to balance microcomputer-based professional support systems against mainframe-based corporate computing facilities — and come out with a system that mirrors the organization.

BY P.D. MOULTON

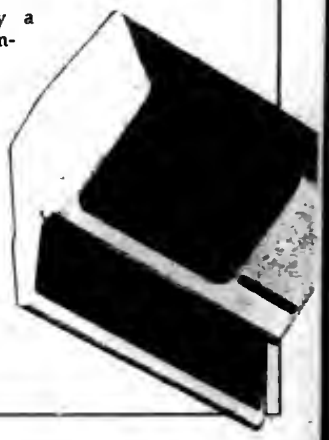
In today's business environment, as computing power and data bases move into the hands of employees throughout an organization, MIS managers find themselves faced with an increasingly difficult balancing act — between centralized corporate computing facilities and the decentralized work environment.

The structure of an organization and its computer systems should mirror one another. Computer capabilities and functions should parallel the users' work activities and data needs.

The core issue is how to integrate microcomputers and intelligent terminals with mainframes and professional support systems with corporate computing facilities (for example, payroll, inventory, sales order entry and so on). The object of this effort is a concept we will call balanced computing.

Balanced computing is essentially a managerial issue, but with technical implications. Unlike distributed computing, which involves moving processing functions out of the mainframe and sharing them among multiple computers, balanced computing implies distributing capabilities and functions that match workers' needs throughout the organization. Its focus is improved worker productivity.

In a balanced computing environment, some data is shared and some is not. Shared data must be interrelated among centralized and remote systems. This can be done using sophis-



IN DEPTH

ticated data dictionaries, or interrelationships may simply be specified by end users.

Not all applications fit the mold of a balanced computing system. Some applications will remain centralized because they require tight organizational control and because large CPUs allow economies of scale and reduced duplication of effort and resources. Corporate accounting and payroll systems fit this category.

Some decentralized applications should also remain unchanged because they are more accessible and responsive to end users. Word processing is a decentralized application: Every user directly controls his own system, hardware is easily expandable in small increments and there are none of the delays associated with submitting jobs to the CPU.

Microcomputers and intelligent workstations are already being integrated with mainframe-based corporate computing in some organizations on a cooperative basis. Before discussing approaches to balanced computing, let us first take a look at the five levels of terminal intelligence, recent product offerings and projected product trends and developments.

Five Levels

Terminal intelligence varies according to the ability to tailor the terminal's functions to the user's applications, either through programs in the host computer or in the terminal itself. There are five levels of terminal intelligence:

- **Dumb.** These are terminals with fixed functions such as the Lear Siegler, Inc. ADM-3. What you buy is what you get. All the adaptation to the user's application must be performed by programs in the host computer in response to special commands entered by the terminal operator. The major benefit of dumb terminals is that they are inexpensive, with prices ranging from $500 to $1,500. Most dumb terminals are good for occasional to moderate operator use because their ergonomics features are limited.
- **Clever.** The applications functions of these terminals are altered through programming in the host computer, commanded using function key inputs from the terminal. The IBM 3270 is an example of a clever terminal. Editing and display formatting features, as well as ergonomic features such as detachable keyboards, tiltable displays and green phosphor displays on clever terminals tend to be more sophisticated than those on dumb terminals. Clever terminal prices range from about $1,500 to $4,000. Their improved ergonomics make them appropriate for moderate to heavy operator use.
- **Smart.** These terminals are programmed through a macro language to perform special editing and data formatting functions. The macro language is specific to the smart terminal. Programs are usually compiled on the host computer and then down-line loaded into the terminal. The IBM 3790 is a smart terminal. Smart terminals range in price from $3,000 to $9,000, and they are used in applications with moderate to heavy terminal use.
- **Bright.** Similar to smart terminals, bright terminals are programmed to perform special editing and data formatting functions. However, this programming is done in a high-level language such as the RPG or Cobol used on the IBM 5280 terminal. Bright terminals are still host-dependent for program compilation and down-line loading. Prices range from $5,000 to $12,000. Bright terminals are designed to support applications having moderate to heavy operator terminal activity. The smart and bright terminal categories are beginning to blend together, with the newer terminal offerings falling more into the bright classification.
- **Gifted.** These terminals support high-level language programming to tailor their operation to any specific application. More important, they also provide the ability to operate independent of any mainframe computer system by supporting turnkey applications programs.

A wide variety of software is available for gifted terminals including language compilers, data management systems, communications software and turnkey applications pro-

Now you can do things with your IBM computer that you've always wanted to do.

Things that will solve your end users' problems. And yours. Without changing your existing IBM environment.

Your hardware, our software

Spectra is our off-the-shelf software. It's a fully-integrated, on-line system developed by Xerox for medium to large IBM computers. It offers a full range of applications for manufacturing, distribution and financial functions. As well as a complete line of software management support systems.

With Spectra, you can avoid years of development and have a system up and running in a few months. You simply phase it into your existing environment and start cleaning up your applications backlog.

You stay in control

Spectra is ideal for single or multi-plant environments considering a closed-loop manufacturing system. It's fully compatible and upgradable with installed IBM CPUs as small as the 4300 series, all the way up to the 3081.

It's proven, too. Its features have been enhanced and refined through years of use by hundreds of satisfied customers. But that's not all. We'll continue to update the system, ensuring that you always have the best software available.

Two ways to get there

You can get the benefits of Spectra by using it on your IBM computer immediately. Or, as an option, start with the same software on our on-line, remote computer services. Then, when you're ready, just move the software and data base in-house.

We'll get you up and running with a comprehensive training and implementation program. After that, we'll always be on hand to help in any way we can.

To find out more about Spectra software, call toll-free (800) 323-2818, Operator 146. In Illinois, call (800) 942-1166.

Or return this coupon. We'll mail you our new *Spectra Capabilities* brochure. And you'll be on your way to doing the things you've always wanted to do with your IBM computer.

Xerox Computer Services
c/o Ron Rich, 5310 Beethoven Street
Los Angeles, California 90066

Send me your *Spectra Capabilities* brochure.
My company is a:
☐ Manufacturer ☐ Distributor
I'm interested in your software for:
☐ IBM 43XX ☐ IBM 370 ☐ IBM 30XX

Name/Title _____
Company _____
Street _____
City _____ State _____
Zip _____ Tel. ( ) _____

C9/20

XEROX

XEROX® and Spectra are trademarks of the XEROX CORPORATION.

BALANCED COMPUTING

grams. Gifted terminals vary in size from Apple Computer, Inc., Radio Shack and IBM microcomputers to minicomputer systems such as the IBM System/38 and 8100 Information System. Prices range upward from $4,000. These terminals fit all (occasional to heavy) operator usage levels because of the type of functions they perform.

When they are performing professional computing functions, moderate and even occasional use justifies their cost. In data entry applications, heavier usage would be experienced.

Enhancing Productivity

The impetus behind balanced computing can easily be seen by looking at some recent terminal and word processor offerings. New terminals developed by Direct, Inc. and ECS Microsystems, Inc., word processors offered by Wang Laboratories, Inc. and Lanier Business Products, Inc. and terminal enhancements announced by Datapoint Corp. illustrate the trend to provide gifted terminal features that enhance the productivity of professionals.

About $465 billion of the $600 billion that is spent on office salaries in the U.S. is spent on salaries and fringe benefits for professionals [CW, May 21, 1979]. Hence, balanced computing systems aimed at professional productivity will grow quickly in office applications. Some balanced applications will be conversions of centralized and distributed systems; others will spring from new people-intensive organizational functions.

In 1981, Direct announced a simple asynchronous teletypewriter protocol terminal with advanced editing features and the ability to emulate a variety of existing terminals, including the Hewlett-Packard Co. V/3000 and Digital Equipment Corp.'s VT52 and VT100. A year later, this terminal was enhanced by the addition of a Zilog, Inc. Z80 microprocessor, 64K-byte random-access memory and dual 5¼-in. floppy disk drives, transforming it into a gifted terminal capable of running CP/M 2.2 applications software.

This year at Interface '82, ECS Microsystems displayed a terminal system that can be interfaced to Burroughs Corp., Honeywell, Inc., NCR Corp., HP, DEC and IBM host computer systems via asynchronous or synchronous data communications protocols. This product's major impact is that it is a stand-alone microcomputer system based on a Z80 CPU with dual 5¼-in. floppy disks and, if desired, a 5M- or 10M-byte hard-disk system.

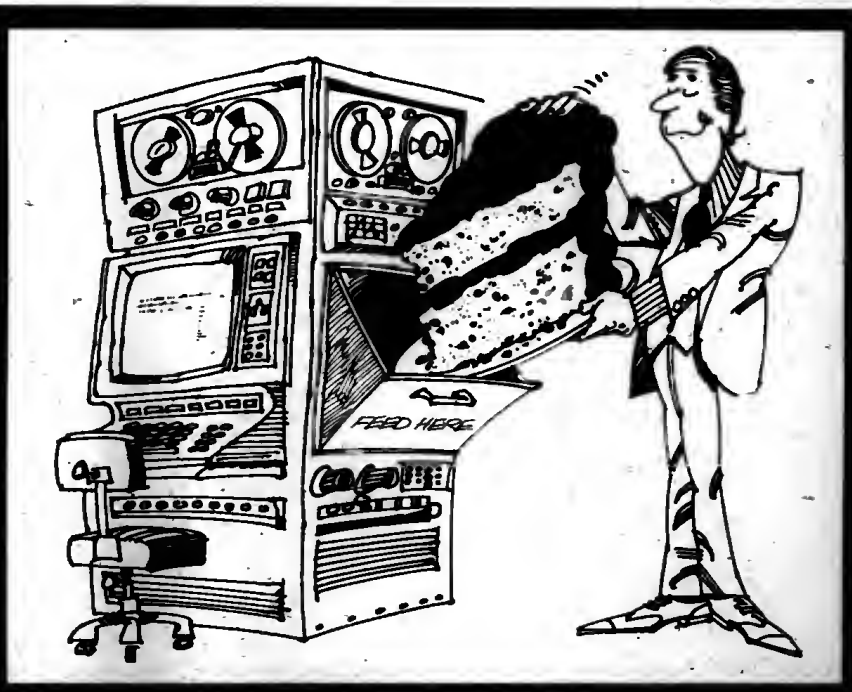
The ECS terminals are capable of running turnkey applications programs, such as Wordstar, by using the popular CP/M microcomputer operating system. This is another gifted terminal with all the terminal software needed to construct balanced computing applications aimed at making professionals and managers more productive.

Word processing systems such as Wang and Lanier are changing into gifted terminals as well. Wang announced its Wangwriter word processor's ability to run the CP/M 2.2 microcomputer operating system and to support asynchronous teletypewriter protocol and Binary Synchronous Communications protocol 2780 and 3780 communications.

Lanier has similarly announced a 3270 data communications option that makes its word processors emulate the operation of an IBM 3270 terminal. In this manner, data can be input to and extracted from existing applications data bases on IBM mainframe computers and then incorporated into memos, letters, reports and other documents using the word processing features of the Lanier.

Datapoint, a terminal manufacturer, has chosen a slightly different approach. It offers a software package for its terminals called Multiplan. This software duplicates the functions of the popular Visicalc program. Thus, Datapoint's approach is to provide capabilities on its terminals that are equivalent to those available on Apple, Radio Shack and IBM microcomputers.

Each of these vendors is moving in the direction that I call professional computing. Personal computing, the term used today to identify a segment of the current microcomputer market offerings, does not depict the



IN DEPTH

full complement of microcomputer features that make professionals and managers more productive in their jobs.

Most microcomputers offered today provide the following professional computing capabilities:

• *Electronic spreadsheet.* This is the Visicalc, Multiplan, Supercalc type of applications programs that assist in performing budgeting, expense reporting and similar functions.

• *Text creation.* Microcomputers provide a variety of software that supports the creation of text for memos, letters, reports (both one-time and periodic) and so on. They differ from the word processing systems because microcomputers view printing of text as a secondary step in the writing process. In contrast, most word processors permit users to view text exactly as it will be printed, thus supporting direct creation of the final document. Translating thoughts into sentences, memos, letters and reports is more important for professionals than printing it in final form. The printing work can then be left to a secretary.

• *Information retrieval.* Software packages that provide information storage and retrieval capabilities are available for most microcomputers. The sophistication of these software packages varies from that of a full-blown data base management system to the ability to keep track of phone numbers and addresses.

• *Communications.* Every microcomputer system has communications hardware and software that allow it to function as a dumb terminal to access mainframe computer systems. Some other independent vendor packages are available that support file exchanges with mainframe computers using asynchronous communications protocols. The trend is toward providing more sophisticated communications support for Radio Shack, Apple and other microcomputers, similar to that now offered by Direct, ECS Microsystems, Wang and Lanier.

In the near future, comprehensive executive/professional software packages will become available. These packages will by menu selection allow the professional to perform apreadsheet work, schedule appointments and deadlines, prepare memos and correspondence, make telephone calls from his electronic directory, create graphica displays of numeric information, perform "what-if" analyses using forecasting models, store and retrieve information in his personal files, communicate with a mainframe and other microcomputers and perform other functions. The precursor of these stand-alone turnkey applications is a package now being offered by Context Management Systems, Inc. called Master of Business Administration (MBA) program [CW, May 10].

The hardware needed to implement balanced computing applications for managers and professionals already exists, as demonstrated by the microcomputer offerings from Apple, Radio Shack, IBM, DEC, Xerox Corp. and a host of others. For example, the IBM Personal Computer offers 128K bytes of memory, two 320K-byte floppy disk storage units, matrix printer and data communications adapter and modem for less than $5,500. The addition of color graphics would increase the hardware cost another $800.

This IBM Personal Computer hardware configuration uses a 16-bit Intal Corp. 8088 CPU. With such a potentially powerful microcomputer at the heart of the system, why not use it to support multiple user stations? IBM's intent with this system is to aim the processing power at providing a highly responsive and powerful system to support complex information retrieval and graphics display features — in other words, balanced computing applications for the professional and manager.

All that is required to implement these applications is an integrated software package with more comprehensive features than the MBA package, especially in the graphics display area. The IBM hardware patiently awaits this software.

Three Approaches

How can these microcomputer systems be integrated with the centralized mainframe? A balance must be

New mbp COBOL Compiler for CP/M-86

cuts run-time 75%! *Or your money back!*

Compared to interpreters, mbp's new COBOL Compiler for CP/M-86* cuts 16-bit micros' program run-time 75%! With it, in one hour you can now run programs that used to take four. Put another way—**it's like having four computers for the price of one.** The dollar savings are obvious—and, awesome!

How is it possible?

An interpreter translates and executes a program one statement at a time—every time the program runs. But, **the mbp COBOL Compiler translates an entire program just once;** then the translated program can be executed as often as you want—*WITHOUT RETRANSLATION!* It's at least four times faster.

We guarantee it—or return the compiler and manual within 30 days for a complete refund.

And, it's COBOL—

the language for commercial and administrative applications. Standardized and maintained like no other language, COBOL opens up a whole range of benefits to business micro users that previously only mainframe and mini users enjoyed.

mbp COBOL Compiler features: *meets ANSI '74 Standard* ■ *offers access to a vast selection of existing application software* ■ *real executable machine code—run-time and memory efficient* ■ *user-friendly (example: more than 500 error messages)* ■ *maximum portability protects software investments.*

For application software developers, the run-time package is reasonably priced and available separately.

Available now for CP/M-86, iRMX-86,* and ISIS,* soon for OASIS-16,* and MS-DOS.*

With twenty-five years worldwide system software experience, for more than twelve years mbp has specialized in custom COBOL implementations for mainframes and minis. Now, the mbp COBOL Compiler for CP/M-86 makes this valuable experience available to micro users.

To take advantage of it, just send the coupon—or **call Dieter Moenig, 415/632-1555**—today

Hardware required: 96K memory, hard disk & 8" floppy
*CP/M-86 is a Digital Research TM, iRMX-86 & ISIS, Intel TMs, OASIS-16, Phase One Systems TM, MS-DOS, Microsoft TM

mbp SOFTWARE and SYSTEMS TECHNOLOGY INC.
7700 Edgewater Drive, Suite 626
Oakland, CA 94621
Phone 415/632-1555

Please send me
☐ mbp COBOL Compiler for CP/M-86 (manual included)* $1400. I understand the compiler will cut my COBOL program execution time 75%, or I may return it (and manual) within 30 days for a full refund.
☐ Manual only, $95.
☐ Free compiler information. ☐ OEM information.
☐ Check enclosed ☐ UPS C.O.D. ☐ VISA ☐ Mastercharge
(Add $3 for shipping. California residents add sales tax.)

Card # _____ Exp. date _____
Signature _____
Name _____
Title _____ Company _____
Address (no PO Box #) _____
City _____ State _____ Zip _____

Visit us at booth 5000 Mini-Micro Anaheim

3270 Optimizer

3270 Optimizer compresses messages

- Quicker response time
- Less line usage
- Up to 25% or more compression
- Transparent to IMS and CICS
- Over 200 installations around the world

Related Products

- 3270 Line Utilization Monitor
  Measures utilization of 3270 lines
- 3270 Line Response Monitor
  Calculates communication response time of 3270 lines

Call or Write:

Our Customers Say:

- "Over 30% of our communication traffic simply vanished. We couldn't believe it."
  Energy Company
- "Our communication bill is staggering. The 3270 Optimizer was an excellent alternative to more hardware."
  Utility Company
- "Our peak response time has been cut in half."
  Life Insurance Company
- "The 3270 Optimizer did more by itself to improve response time than everything else we've tried."
  Communication Company
- "Absolutely the easiest installation job we have seen."
  Manufacturing Company

SOFTWARE

Please call me with more information on 3270 Optimizer. ☐ IMS ☐ CICS

Name _____

Company _____

Address _____

City _____ **State** _____ **Zip** _____

Phone _____

Clip and mail to: BMC Software
P.O. Box 2002
Sugar Land, Texas 77478

struck between the decentralized professional computing performed by microcomputers or gifted terminals and corporate computing performed by mainframe computers.

Some integration is possible today. The following three approaches can be used, but they are not without problems:

• **Terminal Emulation.** In this approach, the microcomputer system emulates a terminal supported by the mainframe computer system for a specific application. Data is communicated in the format used by the host computer application for the emulated terminal. This is Lanier's approach. The Lanier word processor emulates the operation of the IBM 3270 terminal, including screen formatting and function keys. Once the data is received by the terminal, it is then manipulated using the word processing features of the Lanier.

The problem with this approach is that the microcomputer system must translate the data into the exact screen formats using the exact features that the mainframe computer expects from the emulated terminal. The penalty for not providing an exact match is that the terminal's ability to update the host computer data base is restricted. Further translation into and out of the 3270 data format must be performed by the Lanier word processor.

• **Standard Ascii Formats.** A second approach is to communicate all data as text files using standard Ascii data codes. The atructure of the file data transferred is much less rigid, but the drawback is that all files communicated must be translated to a standard Ascii format.

For example, in the Ascii file format for the IBM Personal Computer, files are organized as lines with each line terminated with a carriage return character. Every file ends with an end-of-file marker. This format is used for Visicalc, Edlin and other files. If different programs are used for editing, further translation of the files could be required to achieve compatibility before transmitting the file.

• **Data Base Approach.** In this approach, data bases are distributed between central and remote systems. In contrast to the former approaches, which transfer independent files between systems (the 3270 data was treated as a file by the receiving system), this approach transfers data elements or transactions between systems.

The problem with the data base approach is that there exists little if any comprehensive software to implement such systems. Consequently, the data base approach would require the systems operator to develop most of the transaction communications software as part of his application program. Design and implementation of such systems is prohibitively costly.

Obstacles to Balanced Computing

Some of the obstacles to implementing balanced computing systems are compatibility, communications software, the kingdom syndrome and limited user knowledge.

• **Compatibility.** There are five levels of compatibility: transmission speed, data code, communications protocol, functional or feature and operational. The lower three levels — speed, code and protocol — can be readily resolved today by a variety of equipment. Automatic transmission rate detection matches the transmission speed of the terminal to the speed of the receiving computer for slow-speed asynchronous transmission. Selection of the same modems and transmission speeds for the terminal and the computer easily resolves any mismatch for high-speed asynchronous and for synchronous transmission.

The major codes used in the U.S. today are Ascii (everybody) and Ebcdic (IBM). A simple conversion algorithm and translation table can convert from one to the other. Other less frequently used codes can be similarly translated into these more popular codes.

Several vendors offer microcomputer systems that convert asynchronous teletypewriter protocol to 3270 BSC protocol. Achieving compatibility at the functional and operational levels is a different matter.

Functional compatibility requires

TIME-PROVEN PERFORMANCE

While new printers with impressive specifications are introduced on an almost daily basis, only time will tell the true quality of the product. Over the past 2 years our customers have continued to buy the DS180 printer, not only because of its impressive performance and competitive price, but also because of our outstanding track record for product reliability and customer support.

We have continually improved on the performance of the DS180 by incorporating such enhancements as dot addressable graphics, 8 user-selectable print sizes and a 2000 character buffer. These features coupled with 180 cps printing, parallel and serial interfaces, adjustable tractor feed and over 40 other programmable features, make the DS180 one of the most versatile matrix printers available today.

Before you select your next printer, why not take a look at a time-proven performer—the Datasouth DS180.

The DS180 printer is available nationwide through our network of sales/service distributors.

datasouth computer corporation
P.O. Box 240947 • Charlotte, NC 28224 • 704/523-8500

that the features of the microcomputer system (for example, the number and types of keys, the display formatting and editing features) exactly match the terminal features expected by the mainframe computer software. Thus, the microcomputer must provide the display features expected by IBM's CICS software in the mainframe computer to achieve functional compatibility.

If an exact match of the keyboard is not possible because the microcomputer lacks function keys, then multiple keystrokes could be substituted for the single function key or the function could be left unused. Functional compatibility does not duplicate the exact operation of the terminal expected by the mainframe computer software, but it does provide equivalent features.

Operational compatibility is at the next higher level. It is at the operational compatibility level that the file formats used by programs in both the host computer and the microcomputer system must match. How is data identified? What is its structure? Visicalc file with formulas or straight text? Who is the sender? Operational compatibility must resolve these questions.

When functional and operational incompatibilities exist, the user must develop software to resolve the incompatibilities or use the systems in a restricted form. For example, Lanier's 3270 data communications option supports (perhaps with a special keyboard) 24 function keys and 3270 display attributes. This means it can retrieve and update data resident on IBM mainframes just as an IBM 3270 terminal might. In contrast, the Wangwriter provides BSC 2780/3780 emulation. If it needed to update data in 3270 files, another program may have to be created in the IBM mainframe to perform the update function using batch files transmitted by the Wangwriter using the BSC 2780/3780 protocol.

• **Communications software.** The communications software provided with most microcomputer systems supports communications as a dumb, asynchronous, character-at-a-time teletypewriter terminal. The ability to create files off-line for later uploading and to process files off-line that have been previously downloaded from a central computer is provided by some of these asynchronous communications software packages. It is highly effective and costs about the same as Federal Express and Express Mail. Tables and other computer programs can be transmitted as well, but figures and diagrams can not yet be exchanged.

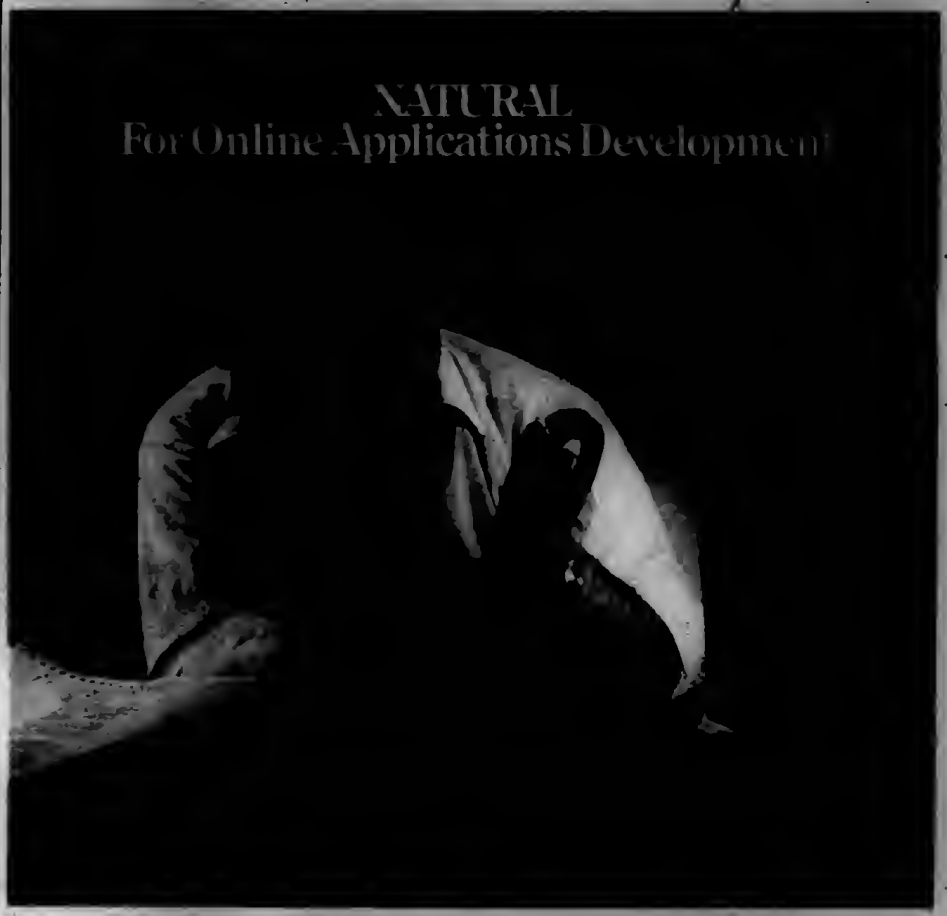
To provide effective communications in the future, microcomputer communications software must increase its support of file transfers and expand to include transaction processing. In addition to supporting a wider range of file and transaction processing, a greater variety of communications protocols must be addressed by these microcomputer systems.

Asynchronous teletypewriter communications (sometimes referred to as Ascii teletypewriter protocol) is a first-generation protocol derived from TWX, telex and other similar asynchronous communication protocols. (Many of these earlier protocols use the Baudot code set.) They are simple and easy to implement.

However, there are many variations of these asynchronous protocols. This can be seen by examining how terminal manufacturers providing limited graphics capability on their terminals implement communications of graphics data within the constraints of asynchronous communications protocols. Every manufacturer has a similar but unique approach. Efficiency of communications averages 5% to 10% using asynchronous communications protocols to support interactive terminals.

BSC protocols developed in the 1960s by IBM represent second-generation protocols. There are fewer variations (for example, BSC 3270, BSC 2780, BSC 3780 and Hasp workstation BSC) of the BSC protocol than of the asynchronous communications protocols, but more sophisticated hardware and software are required to implement the BSC protocol.

Because it is more sophisticated, BSC provides more features including error detection and correction



When you absolutely, positively can't be late.

NATURAL from Software AG can help you deliver on time, every time. NATURAL is an online programming productivity package that can eliminate 90% of the time it now takes to develop new applications or modify existing ones. In a single comprehensive system it provides all the tools necessary to quickly implement sophisticated yet practical online applications.

NATURAL handles data management programming, map definition, program testing, ad-hoc queries, and report generation. The total transportability of NATURAL between different operating environments eliminates the need for programmers' expertise in such areas as job control language, TP systems commands and online test procedures. And since it is totally interactive, NATURAL makes it easy to respond to changing user needs without risking late delivery of the completed system.

NATURAL is designed to be used with ADABAS, the most comprehensive and flexible data base management system available for IBM and plug-compatible mainframes. Don't delay, find out more about NATURAL by returning the coupon today.

SOFTWARE AG OF NORTH AMERICA, INC

Software AG of North America, Inc.
11800 Sunrise Valley Drive
Reston, VA 22091
(703) 860-5050

☐ Please send me information on NATURAL.
☐ Please send me information on your FREE DBMS seminars.

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip Code _____ Telephone ( ) _____
CPU _____ Operating System _____

CW 0890

IN DEPTH

(via retransmission) and data transparency or the ability to transmit any type of data — standard codes or binary data. Transmission efficiency is higher for BSC protocols than for asynchronous protocols, but message flow is half-duplex, with each transmission requiring an acknowledgment. A few gifted terminals support BSC protocols.

Three protocols are third-generation protocols: Digital's Data Communication Message Protocol (DDCMP), IBM's Synchronous Data Link Control (SDLC) protocol and the X.25 High-Level Data Link Control (HDLC) protocol. The protocol I personally favor, DDCMP, is implemented primarily on DEC equipment and is not as widespread as SDLC and HDLC.

Of these third-generation protocols, SDLC is the most widely implemented. HDLC has the greatest potential because it is specified and implemented as part of the X.25 interface to public packet-switched data networks. These third-generation protocols (and at this time particularly SDLC) need to be supported by microcomputer communications hardware and software. Fourth-generation local-area network protocols such as the Carrier Sense Multiple Access/Collision Detection (CSMA/CD) and token passing protocols must also be supported by microcomputer systems in the future.

• **The Kingdom Syndrome.** All hardware manufacturers want to keep their customers forever. As a result, they build unique standard and special enhanced features into their terminal products that, when used by the purchaser, lock him into continued use of that terminal product. Standards are a joke: Even though terminals are built to the same standard, they are not necessarily interchangeable. Implementation and operational difficulties frequently arise because of the unique features built into each terminal. Real standards arise whenever lots of identical hardware is constructed and sold in the marketplace. This is the case with the de facto standards created by IBM equipment. More de facto standards are needed, specifically standard disk storage formats, file storage formats, microcomputer-to-microcomputer file exchange handshaking and so on.

• **User knowledge.** User knowledge of computers and their design and operation is limited. Today in the U.S., we are more computer literate than anywhere else in the world, with the possible exception of Japan. However, the majority of working professionals are unfamiliar with microcomputer systems and with fundamental data communications concepts.

Whenever a professional begins using a microcomputer system, he invariably begins to dig into the system and to become intimately familiar with its hardware and software. A normal level of curiosity leads the professional to program or modify programs. Soon his microcomputer system becomes the "best" microcomputer system. With a fundamental knowledge of these microcomputer systems (gifted terminals) and exposure, more detailed knowledge follows. This detailed knowledge is required to make the most effective use of today's microcomputer systems. Less intimate knowledge must be required in the future.

Balanced computing is the vision of the '60s, the promise of the '70s and the reality of the '80s. In spite of the obstacles cited above, users will implement balanced computing systems in this decade — with or without the mainframe manufacturers' support.

About the Author

P.D. (Pete) Moulton's career includes 14 years' experience in planning, designing and implementing data communications systems. He has been a vendor, independent consultant and telecommunications user.

Based in Columbia, Md., Moulton has published more than 20 papers in computer and communications trade journals. He has developed and delivered seminars in the U.S., Canada, Europe, South America and Southeast Asia on the fundamentals of data communications, advanced data communications, terminal development and selection, computer performance evaluation, data security and mini/micro computer selection.

MAXCIM™

ON LINE INFORMATION...FROM THE PRODUCTION LINE TO THE BOTTOM LINE.

Running a manufacturing plant requires a constant flow of timely information. Not just in terms of nuts and bolts. But in dollars and cents.

And MAXCIM provides precisely that. On-line, real time information... from the production line to the bottom line.

It's the ultimate manufacturing and financial management system. Designed specifically to maximize your plant's productivity. And minimize costs. Operating on-line, in an interactive mode, MAXCIM is a comprehensive system of manufacturing and financial software modules integrated through one common database... a system which provides immediate inquiry capability to manufacturing, finance, engineering and marketing. So management can control the entire manufacturing process. While it's still in process.

Designed to run on *DEC PDP-11 and VAX minicomputers, MAXCIM is user friendly. Data entry and inquiry are menu-driven via standard CRT and teleprinter terminals. So plant personnel don't have to be data processors to process the data they need. On the other hand, you'll like the system's sophistication. Modular flexibility. Multi-level security. Extensive audit trails. And graphics capability.

You'll also appreciate the complete system documentation we provide. And the professional training, installation and support services you receive. All backed by the experience we've gained working with hundreds of companies, large and small.

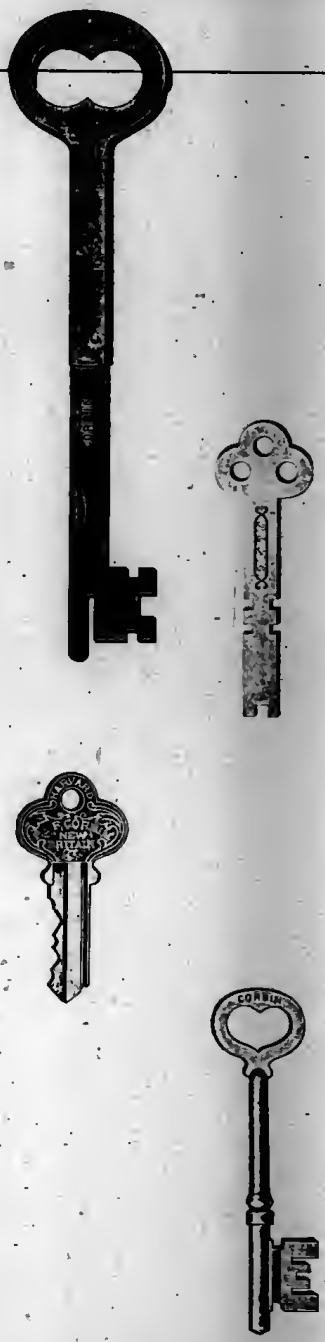
If you're looking at manufacturing and financial management systems, you can't afford to overlook MAXCIM. No other system is so comprehensive. So flexible. Or so well-supported. Call NCA today. Or write for our brochure.

NCA CORPORATION
Manufacturing/ C39
388 Oakmead Parkway
Sunnyvale, CA 94086
(408) 245-7990

*DEC, PDP 11 and VAX are trademarks of Digital Equipment Corporation.

See us in Booth 305 at Software Expo National, September 21–23, 1982, Chicago Merchandising Mart Expocenter.

Baltimore · Boston · Chicago · Dallas · Houston · Los Angeles · Portland · Sunnyvale/Sydney, Australia



Who Owns Innovation?

By Robert A. Spanner

Part 1 of a two-part series on the rights and obligations of high-tech professionals

THE OLD ADAGE "KNOWLedge is power" is coming to have its commercial counterpart in the more crass but equally valid aphorism "information is money." In a nation that is entering the so-called postindustrial information society, information has quite literally become capital. A firm with a new product or service, or even only the promise of one, often commands huge multiples of earnings, while scores of highly capitalized companies in industries lacking the impulse to innovate are valued well below the actual value of their physical assets. There can be no doubting the extent to which information is directly translatable into dollars.

This is an article about the commercial exploitation of information. More specifically, it is about information in high-technology industries and the rights of those in possession of that information to use it for

This article is excerpted from the author's forthcoming book Who Owns Information?, *to be published in 1983 by Dow Jones-Irwin, 1818 Ridge Road, Homewood, Ill 60430.*

IN DEPTH

their own purposes.

I use the term "information" here not in its narrow sense, but in the sense that the word is used by social scientists — to connote an aggregate of data, facts, knowledge and experience. The term incorporates things as disparate as a printout in object code and the judgment of a research scientist.

In short, technology is transforming the economic landscape, and that transformation is occurring at an accelerating rate. Robotics, which crept unobtrusively into public awareness in the '70s, has become an irresistible tide of innovation in the '80s. Miniature integrated circuits, which represented a solution in search of a problem when they were invented, are now being incorporated in countless products. And the rate of introduction of computers into home, school and office has been explosive.

A corollary of the rate of innovation and the economic value of information is that knowledgeable scientists, skilled engineers and clever programmers will be in even greater demand in the future. Because of the value of their services, they will become the object of intense competitive bidding, and high labor mobility will result. And this situation is aggravated by the failure of our educational system to turn out sufficient members of technologically proficient professionals.

New Management Directions

This evolution of the labor market requires the adoption of new management procedures. Some may feel that many of the measures and precautions to be suggested here are overly formalistic legalisms that have no relevance to real-life business practice. Whether from the perspective of the executive or the technology professional, they may believe that professionals do not as a rule steal information and that the legal guidelines governing the use of information are unnecessary. But what this approach overlooks is that the departing employee and the employer have radically different perspectives on the use of information acquired during employment.

And such a notion dangerously underestimates the tremendous value of knowledge in technological industries and the high passions that the prospect of loss of that knowledge to a competitor can arouse. It must be remembered that in high-technology companies, the employees' knowledge, information and skills constitute a far greater proportion of the company's overall capital than is the case for basic industrial companies.

Unlike companies in other industries, where good management, sound marketing and investment in modern plant and equipment will generally assure success, a technology company can fail overnight despite all these advantages if its competitors gain a technological advantage.

When a key employee leaves, he is in a very real sense taking with him not only his services, but a part of the company — both of which may then be used in the employ of a competitor to the detriment of the company. It is therefore all too easy for management to perceive the departure of a knowledgeable executive or engineer as being tantamount to theft.

Sense of Kinship

Compounding management's sense of wrong is the fact that technology professionals are virtually indistinguishable from management; they come from the same social backgrounds, went to the same schools and enjoy high incomes. Further, rather than being remote from management, as is the case with industrial employees, high-technology employees either are part of management or work intimately with management in the development, production and sale of products and services, and there is often a sense of identity and common purpose between management and technology professionals.

Therefore, the loss of a respected scientist or engineer is more like the loss of a friend than of a mere subordinate, and termination of employment often resembles divorce more than the severance of an impersonal contractual relationship. Feelings of treachery, betrayal and personal repudiation are not unusual.

Both the perception of misappropriation and the sense of betrayal can turn the severance of the employer-employee relationship into a no-holds-barred, fight-to-the-finish confrontation. Indeed, the closer the working relationship an employee had with management and the greater an employee is valued, the greater will be the potential for hostilities. Therefore, it is particularly important in these circumstances that legal

INFO-Text™ ARRIVES SEPTEMBER 29th. AT THE FEDERAL COMPUTER CONFERENCE, BOOTH #630.

Take the guesswork out of testing and build confidence into your software . . . with TRAILBLAZER.™

TRAILBLAZER is a unique family of low cost tools that makes it possible to "see into" COBOL, FORTRAN, or PL/I software and really control development and maintenance; to catch bugs before systems go into operation; to cut the size of test files by as much as 90%.

TRAILBLAZER is valuable to anyone involved in software development, maintenance, or management. It analyzes structure and takes the guesswork out of determining how thoroughly software logic has been tested. It identifies and analyzes changes and their impact.

TRAILBLAZER is remarkably easy to install and use in a wide range of mainframe and minicomputer environments, even CICS and IMS.

Find out more about TRAILBLAZER. Call or write Mr. Dan Forman.

TASC
THE ANALYTIC SCIENCES CORPORATION

One Jacob Way, Reading, Massachusetts 01867 / (617) 944-6850

TRAILBLAZER is a trademark of The Analytic Sciences Corporation

formalities be closely observed. By closely adhering to the requirements of the law, the departing employee and his employer can evoid ill will and diminish the potential for future conflict.

Trade Secret Law

What follows is an analysis of the relationship between trade secret law and business practices common in high-technology industries. "Trade secret" is an elusive concept; like obscenity, you know it when you see it, but everyone has a different concept of what it is. Basically, e trade secret is a process, device or other embodiment of information developed by e company and used in its business that gives the company a competitive advantage and that the company seeks to keep confidential. The law of trade secrets regulates the use and disclosure of that information.

For the most part, the law of trade secrets is e branch of common law, which means it has been built up case by case from decisions over many years. In this respect, it is different from patent law or copyright law, which are governed by statute. Trade secret law also differs from other laws governing intellectual property, such as the patent and copyright laws, in that while patent and copyright laws are federal statutes that apply throughout the U.S., each state is free to interpret the common law of trade secrets according to its own precedents.

'"Trade secret" is an elusive concept; like obscenity, you know it when you see it, but everyone has a different idea of what it is.'

While this could theoretically result in 50 divergent and conflicting sets of rules, in point of fact there is a consistency in the cases across jurisdictions, and the courts of each state commonly rely upon trade secret cases from other jurisdictions that are factually similar. Therefore, although the rule of law in e given state might differ from the commonly accepted rule, for the most part the following discussion represents e distillation of more-or-less generally accepted principles of law.

Disputes over the use of information acquired during the course of employment can arise in a host of different circumstances, and subtle differences in the underlying facts can radically alter the respective rights of employer and employee. Perhaps the best way to illustrate subtleties in the law is by way of example; reciting the complex legal principles in the abstract never communicates much — not even to judges. Therefore, we have assumed the following hypothetical situation.

Our protagonist, Roger Smith, is e mechanical engineer with an advanced degree in computer science. He has six years of work experience in computer-aided design and has just received his first management position — research director for a new computer-aided design and manufacturing (CAD/CAM) system for the machine tool industry.

The Confidentiality Agreement

Let us suppose that when Smith arrives for his first day on the job, he is handed, as is common in the industry, a nondisclosure and confidentiality agreement to sign. It generally states that the employee agrees not to use or disclose the confidential and proprietary information of the company during or after his employment.

There is no specification of the information the company asserts a proprietary interest in, and Smith asks the personnel administrator about it. He, of course, does not know either, since the personnel department could not possibly be expected to know what information each new employee is likely to be exposed to during his tenure. Smith does not know what to do, since he has never seen the agreement before, has not had the opportunity to consult an attorney and is not sure what the agreement implies, but he is told that all new employees must enter into such en egreement before starting, so he shrugs and signs.

Trade secrets will be protected by the courts even in the complete ab-

Why do you think they call it a dump?

dump/A dull, gloomy state of the mind, low spirits ... A thick, ill shaped lump or hunk of anything ... To deposit something in a heap or unshaped mass, as from a cart.

Webster

In today's sophisticated data processing environment, the memory dump remains ea en ebsurd enachronism.

Abend-AID is en DS end DDS operating system enhencement designed specifically to solve the problem of program abends, end to eliminete the memory dumps they produce

YES

- Abend-AID will examine each ebend, extract necessary information, and present e concise English explanation
- Abend-AID is the only software product offered thet transfers the manual, error-prone task of enalyzing abends from the progremmer to the computer for every languege.
- Abend-AID ia dynamically invoked by the operating system end intercepts the abend before the IBM dump ia triggered.
- Abend-AID has the intelligence to recognize various programming environments such es IMS, DL/1, RACF, TMS, atc.
- Abend-AID is immediataly effective In both test and production anvironments.

NO

- Abend-AID ia not a dump formatting packaga
- Abend-AID does not require eny JCL changes.
- Abend-AID does not require eny modification to IBM code.
- Abend-AID does not require eny user manual or special training.
- Abend-AID does not require any overhead until a program abends and then it will be less than a system dump.
- Abend-AID does not requira eny special compiles or eny other ection. Only e SYSUDUMP/SYSABEND OD card or SYSLST assignment is necessary

Currently, 1600 users worldwide are benefiting fror Abend-AID. A free 30 day evaluation ia availabla to show you how banaficial Abend-AID can be in your installation.

Call 1-800-521-9353 for the sensible way to hendle ebende.

Aid

COMPUWARE

Corporate Headquarters
32100 Telegraph Road
Birmingham, Michigan 48010 (313) 540-0400

Need Software For IBM System/38?

Distripak/38™ software is the ideal ready-to-run order entry and inventory control system for distribution and manufacturing operations with finished goods inventory. It is supported by a team of professionals who are specialists in System/38 business applications.

This online, "native-mode", interactive software eliminates conversion worries and uses the unique architecture and data-base facilities of the System/38.

Distripak/38™ gives you the full range of key functions in one powerful, easy-to-use package: Order-Processing, Inventory Control, Accounts Receivable, Purchasing/Receiving, Sales Analysis and Mail Order operations.

Call or write today. We'll respond immediately. The sooner you install Distripak/38™, the sooner your System/38 will deliver the goods.

Softmatics Corporation, 44 Mall Road, Burlington, MA 01803, Telephone (617) 273-3420.

Copyright 1982 by Softmatics Corporation
Distripak/38™ is a native-mode conversion of the CA-PRISMS™ System. CA-PRISMS™ is a trademark of Computer Associates International, Inc.

SOFTMATICS CORPORATION

IN DEPTH

sence of a confidentiality agreement, for an employee has a duty implied by law not to use or disclose the trade secrets of his employer without authorization. The confidentiality agreement, therefore, is not utilized for the purpose of *acquiring* trade secret protection. Rather, its purpose is fourfold:

- To indicate that the company has proprietary information it is making an effort to keep confidential.
- To identify *what* information it deems proprietary.
- To notify the employee that he will receive confidential information during the course of his employment.
- To notify the employee *what* information he must keep confidential.

Lost Protection

Generally worded confidentiality agreements like the one we hypotheaized for Smith are frequently used by high-technology companies because they are convenient. Their use does not demand management attention. Lawyers draft them, and each new employee is required to sign. But what the company gains in convenience it may lose in protection.

While the routine use of a generally worded nondisclosure agreement may make business sense for some positions, the practice may be unwise for key employees or those who will possess particularly sensitive information.

The problem with a nonspecific confidentiality agreement is that it is inherently ambiguous. Since a sweeping claim of proprietary information fails to identify the specific information for which protection is sought and obviously covers information that is manifestly not secret, the agreement cannot be looked to for evidence of what the company regarded as its bona fide trade secrets prior to the time a dispute with a departing employee arose.

A blanket agreement that all information used by the company in connection with its devices, processes and research is secret will not be honored, because courts will not confer trade secret protection upon information that is not, in fact, a trade secret. Furthermore, an ill-defined claim of secrecy does not give the employee notice of what information he may not use or disclose after he leaves his employer. Elemental and widely held notions of fairness will not permit the imposition of liability ex post facto.

In order to prevail on a claim that certain information is a trade secret, a company must show that it regarded that information as secret and sought to keep it confidential. A company's failure to inform employees that it regarded certain information as confidential would figure prominently in a lawsuit charging unauthorized use of that information.

It would therefore be safer, in the case of sensitive employees, to indicate specifically the nature of the information for which trade secret protection is claimed in the text of the confidentiality agreement or in an addendum; and it would not be gilding the lily to include this subject in the employee's initial briefing.

Speak Up

When an employer confronts a new employee with a claim of confidentiality for information the employee believes may already be within his own knowledge and experience, the employee should make that fact known. If possible, he should ask that reference to any such categories of information be excluded from the agreement. The employee may be apprehensive about antagonizing his new employer, but enlightened companies will not resent legitimate exceptions to a broadly worded nondisclosure agreement. Some even specifically provide for them in the agreement.

At the very least, the employee should record in a written memorandum to the company the nature of his concerns *before* he gains access to proprietary information.

As employees come to appreciate the potential impact of confidentiality agreements, and as information and experience in high technology becomes an ever more valuable commodity that employees want to preserve to themselves, their hesitance to address the contents of confidenti-

If you want a data security system that helps eliminate terminal mistakes, rip this off.

The EDS Security Access Controller (SAC). It's a simple and practical way to protect sensitive information from the high cost of accidental access errors. And malicious tampering.

Compatibly designed for IBM MVS, VS1 and DOS/VSE operating systems, SAC authorizes system usage. Plus gives you explicit control over what files, data sets or group of data sets an authorized user can access. As well as what functions each user can perform with that data.

The payoff? By limiting the potential for costly access-related mistakes and tampering, SAC can improve the profitability of your data processing operation.

Equally attractive, SAC is from Electronic Data Systems (EDS), one of the world's largest data processing specialists. For you, that means people, expertise and ongoing support.

Find out more. Just rip out this ad and mail it to us. We'll send you detailed information about how easily SAC works. And how it prevents mistakes that can cost you a bundle.

Write: EDS Software Products Division, 7171 Forest Lane, Dallas, Texas 75230.
Or call: 1-800-527-0128.
In Texas: 1-800-442-5791.

Name _____
Company _____
Address _____
City _____
State/Zip _____
Operating System _____ Phone _____

EDS Software Products

© 1982 Electronic Data Systems

ality agreements should erode under the influence of necessity.

Preserving Secrecy

It does not take very long in business to learn what a profound pain the requirements of the law can be. Trade secret law is undeniably an aggravation. Maximizing trade secret protection also maximizes costs, diverts attention from the company's basic mission and creates the potential for conflict with employees.

Selecting the appropriate level of security for confidential information is essentially a process of balancing the cost of unauthorized disclosure and use against the tangible and intangible costs of preserving confidentiality. Management must make its own assessment as to what security precautions are appropriate for each program, process or item of information the company wishes to keep confidential. But in order to arrive at the optimum mix of security procedures, management must consciously address the issue of trade secret protection, rather than leaving it, as so often occurs, to happenstance.

To illustrate the tension between business practice and legal exigencies more fully, let us imagine that Smith's company has put substantial resources at Smith's disposal, but wants a working system within a year. In light of such a tight deadline, Smith believes it is important for the members of his research group to develop a tight cohesiveness, because the company's deadline will not permit counterproductive infighting.

To that end, he begins holding weekly meetings at which technological and management problems are aired and progress analyzed. In order to promote support for his project within the company and to make available to his group a wider range of expertise, Smith opens these meetings to engineers and computer professionals from other departments and actively solicits their participation.

To further the goal of keeping his employees happy and working at peak efficiency, Smith also promotes individual autonomy. He allows his subordinates to come and go as they please and supplies them with remote terminals so they may work at home. In addition, Smith tolerates a substantial degree of disorder in the office, since he knows that when an employee is working late at night, the last thing he wants to do is clean up afterward, especially when he is going to spread the same material out again in the morning.

Because the company is entering a new market, Smith knows he must not merely meet demand, he must *create* demand for the company's system by making the machine tool industry and related heavy industries aware of what will be available soon. To that end, Smith gives speeches at trade association meetings promoting the concept of automated control, and he encourages his engineering professionals to give professional papers describing the system.

As soon as a prototype is operating, Smith invites industry executives to observe the system. He then follows up these demonstrations with an analysis of their own company's needs, and he demonstrates the adaptability of the system to their particular applications.

Secrecy Compromised

Everything we have assumed Smith did to promote the satisfaction and efficiency of his staff was not merely reasonable, but represented sound management decision-making. Nevertheless, each such practice in a small way compromised the company's right to trade secret protection for the new system.

As was mentioned earlier, the first prerequisite to trade secret protection is demonstrating secrecy in fact. Permitting employees to take confidential material home, giving employees remote access to trade secret programs and disregarding the company's security policy are not practices that would enhance the company's claim that it took precautions to protect its trade secrets.

This is not to say that any of these practices in isolation would destroy the confidentiality of information where the company's other security measures were sufficient, but proving something as intangible as "secrecy" is a cumulative process. Each chink in the armor would make it that much more difficult to demonstrate that the company had adequately protected the secrecy of its information.

Caution in Marketing

The same tension between business and legal objectives in the development phase also arises in marketing goods and services. Conference addresses, professional papers and informational sales meetings are all excellent methods of promoting awareness of a newly developed product, and it would certainly be difficult to catch the attention of a prospective buyer at one of these gatherings without disclosing to him something he did not already know.

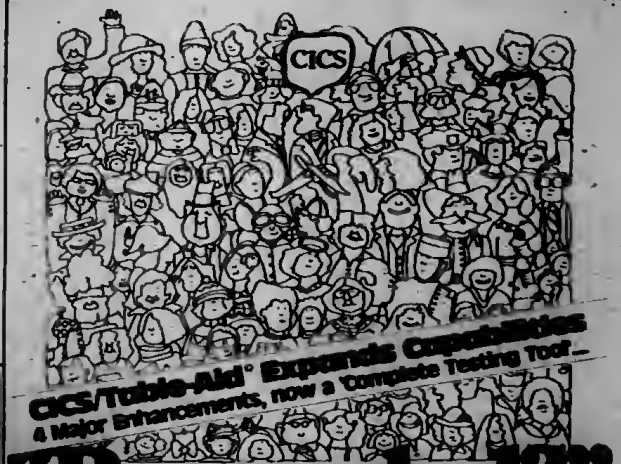
But like the Rubaiyat's Moving Finger, once what is writ is writ (or uttered), it cannot be recalled, and any confidential information thus conveyed is transmuted from commercial secret into public, and therefore freely available, information. Accordingly, everyone involved in the marketing effort needs to understand what may and may not be disclosed to prospective buyers.

In order to protect the confidentiality of communications with clients and customers and to permit a company the freedom to be less secretive about its products and processes, a company may ask potential buyers to sign agreements acknowledging the proprietary nature of what is to be revealed to them during sales negotiations and agreeing not to disclose it.

Obviously, company sales personnel have to exercise some discretion in using this device, so as to avoid arousing resentment. But a confidentiality agreement permits the marketing effort to proceed unimpeded, because anything disclosed under an agreement of confidentiality will not

Financial Modeling IFPS

ON LINE TIME SHARING



CICS/Table-Aid® Expands Capabilities
4 Major Enhancements, now a Complete Testing Tool...

"Bepuzzled?"

- ☐ Do you sacrifice programmer productivity waiting for CICS table updates?
- ☐ Do you have to shut down CICS to add new programs or transactions to the system?
- ☐ Can your application programmers (without using the CICS Master Terminal function) easily:
  - Enable/Disable programs or transactions?
  - Display program statistics?
  - Display transaction statistics?
  - Request a new version of a load module?

CICS/Table-Aid gives your programmers an entire inquiry and maintenance facility for the CICS PPT and PCT. This facility includes the capability to dynamically add entries while CICS is up, and does not require any predefined dummy entries or knowledge of any CICS internal bit settings. Best of all - if you add a new entry using CICS/Table-Aid today, it will be there tomorrow as well.

For more details, reply today!

ftw associates, inc.
120 Wall Street ■ New York, NY 10005 ■ 212/344-4087

IN DEPTH

be considered a public disclosure or a breach of company security.

Termination and Obligations

Let us suppose that a dispute arises between Smith and his employer. Smith believes the system his group has designed will sweep American industry and he wants to price it low enough to generate volume sales. His company, on the other hand, wants to recover its investment early by pricing at a level only the largest companies can afford. Smith is frustrated, and his dissatisfaction grows into a determination to find a company with a more accurate perception of the market potential for his creation.

We now have the raw potential for a lawsuit. In his job, Smith has learned how to translate CAD system output into a fully automated manufacturing process. He also knows his present employer's marketing plans and has developed market data.

No competitor has the right to hire Smith in order to procure his present employer's trade secrets. On the other hand, no matter how sensitive the information in a given employee's possession, that does not give his company an indenture upon his services for life. Absent an employment contract for a given term of years, an employee is free to find alternative employment and to use his education, expertise and experience, even on behalf of his present company's competitors. Indeed, it is more likely than not that an employee with highly specialized skills will *only* be able to utilize those skills with a close competitor.

The objective from Smith's point of view (and that of any company interested in hiring him) is for Smith to conduct himself in such a way as not to give the impression that he is trafficking in confidential information, but rather that he is merely leaving one job for another which he hopes will be more satisfying.

One of the most important objective factors affecting the perception of Smith's true intent is the particular position for which he is being considered. For example, if Smith were in possession of his employer's trade secrets and if a competitor were suddenly to create and offer to Smith a new position with precisely the same responsibilities he has in his present position, this might give rise to a later inference that the new employer was not interested in Smith so much as in using the proprietary information he had in order to develop the same system he had designed for his present employer.

On the other hand, if the recruiting company were seeking to fill a vacant position with a person of Smith's qualifications and experience, this would be indicative of a bona fide effort simply to fill a key position rather than to misappropriate another company's trade secrets. Thus, when an employee who is in possession of confidential information wishes to change employment, he should seek a position that is consistent with his overall qualifications and experience and that has responsibilities beyond merely utilizing the proprietary information he has acquired in his present employment.

Although there is nothing illegal about the creation of a position for someone because he enjoys an excellent reputation, if the position by its nature maximizes the possibility of using a former employer's trade secrets and has identical responsibilities as the employee's previous employment, the suspicion that the employee was hired not to fill a position but to utilize unfairly his former employer's trade secrets will be unavoidable. Except in cases of outright theft, trade secret cases are always very close, and therefore appearances can be crucial.

Recruitment Procedures

Once Smith has accepted an employment offer, he and his new employer must then decide what their policy toward recruitment of other employees in Smith's group will be. If Smith were simply to give notice, resign and begin work with his new employer, he would have to organize an entirely new group, and that would take time that could ill be afforded in view of their competitor's lead in the marketplace. Even if his new employer were as well endowed with professional talent, Smith

PRIME USERS–
Save $5,700 on every Megabyte of Add-in Memory.

Prime charges $19,000, EMC only $13,300.

We're far and away the leading supplier of Prime-compatible memory. And price is only one reason why.

There's also high quality. We give every one of our memories a 100-hour burn-in, a worst-case test on our dedicated testers, and a live test on a Prime system.

Because our memory uses less energy, you cut operating costs up to $1,000 per year per megabyte.

And you save another $3,000 per year by avoiding Prime's monthly maintenance charge.

We take trade-ins.

If you've got a chassis full of 256KB boards, we'll take them in trade and replace them with 1MB boards, so you can increase your memory fourfold.

Buy a pair, rent a spare for next to nothing.

We call this our On-Site Memory plan, and it's one of the many ways we bend over backwards to keep you up and running.

Call to see if you qualify for a free trial loaner.

If your system isn't responding the way it should, and you think more memory might help, give us a call. We've discovered a number of ways to tell when you need more memory, and we'll be glad to share them with you. And if you qualify, we'll even loan you a free board to see if it helps.

A great price, great memory, and great customer service. Your Prime source for all three.

For more information, call today, (617) 244-4740, or write EMC Corporation, 385 Elliot Street, Newton, MA 02164.

PRIME is a registered trademark of Prime Computer, Inc., Natick, Mass.

EMC²

SuperBrain II

Summa Cum Laude!

Just three years ago, Intertec stunned the microcomputer industry when its SuperBrain™ desktop computer graduated with honors . . . outperforming all the others by achieving the best price/performance ratio in its class. Today, that scholastic achievement remains unchallenged. At least until now. . .

Announcing SuperBrain II™. . . . our latest microcomputer marvel that's destined to be the "Most Likely to Succeed" in the Class of '82. With thousands of SuperBrains in use worldwide, it's no surprise that SuperBrain II users have given our new model the highest honors yet. Standard features include a powerful 64K of internal memory, a CP/M* operating system, a 24 line × 80 column display on a 12-inch non-glare screen, a full-featured ASCII keypad with operator convenience keys, twin Z80 processors and dual RS-232 communications and printer ports. But SuperBrain II outsmarts its Class of '79 counterpart by offering *leaner* pricing, *more* features and *better* overall system performance. New SuperBrain II features include a faster, enhanced disk operating system, a library of new visual attributes including reverse video, below-the-line descenders and impressive graphics capabilities *and* Microsoft' BASIC — all included at absolutely no extra cost!

SuperBrain II's internal circuitry has also been completely redesigned and is now computer tested to ensure optimum field reliability. Plus, there are four new SuperBrain II models from which to choose, offering disk storage capacities from 350K bytes to 10 megabytes! But, best of all, prices start as low as $2,495, including software!

Of all the single-user microcomputers available today, our SuperBrain II is certainly in a class by itself. Not only does it outprice *and* outperform its competitive classmates, it's also backed by our comprehensive customer protection programs — depot maintenance, extended warranties, a satisfaction guarantee and a factory sponsored users group. All in all, the SuperBrain II™ represents the most incredible microcomputer value we've ever seen (or probably ever will see) in a long, long time.

Contact your local dealer or call or write us at the address below for more information on our full line of single and multi-user microcomputers. Ask for our SuperBrain II "Buyers Guide" and find out why so many microcomputer buyers who insist on quality and value . . . insist on Intertec.

INTERTEC DATA SYSTEMS®

2300 Broad River Rd. Columbia, SC 29210
(803) 798-9100 TWX: 810-666-2115

*Registered trademark of Digital Research ‡Microsoft is a trademark of Microsoft Corporation.

IN DEPTH

would obviously prefer to keep at least his trusted lieutenants with him — if not his entire team.

However, where there is a close question whether an employee's departure to a competitor to develop a competing system would be a breach of his duty to his former employer not to use or disclose confidential information, it would be too risky for him also to lead a wholesale exodus of employees. Although some courts have displayed a remarkable equanimity about mass resignations, others have inferred from them a perfidious attempt to weaken the competitive capabilities of the former employer and to unfairly appropriate its business.

But there are ways to achieve many of the same benefits as would accrue from direct recruitment by Smith without incurring legal exposure. First, the recruitment effort should be conducted exclusively by the new employer. Recruiting by a competitor per se violates no legal obligation, for employees not under a contract of employment have the right to work for whomever they want, and competitors have the corollary right to recruit them.

It is unwise for a departing key employee to participate in this recruitment, even indirectly by supplying information such as employee salaries, level of job satisfaction and the like. Such information has been deemed by some courts to be confidential and its disclosure to a competitor to constitute a breach of an employee's duty of loyalty to his former employer not to disclose its confidential information. Particularly until the intention to leave is disclosed to the employer, it will often be regarded as a breach of the duty of fidelity for an employee to recruit or to assist in the recruitment of other employees on behalf of a competitor.

Even after Smith gave notice, it would be of questionable judgment for him to try to induce his colleagues to leave, for his duty of loyalty endures to the end of his employment and even survives his departure in certain regards. Therefore, the best practice would be for Smith to isolate himself from all recruitment efforts.

However, there are a number of things a departing employee can do that might facilitate later recruitment by his new employer. For example, before accepting a new position, such an employee certainly would have had the right to disclose his offer to his superiors and to discuss it with his colleagues. It may be that his employer will want to try to induce him to stay; in like manner, Smith's discussions of the relative merits of the offer with his colleagues might lead him to conclude that he did not wish to accept the offer after all. An employee certainly has the right to speak freely with his colleagues about an employment offer so long as he does not surreptitiously solicit their departure.

By informing his colleagues of his offer and the plans of the company, a departing employee might well strike responsive chords among those of his colleagues who were also dissatisfied and might cause them to be receptive to other employment opportunities themselves. It is common for a number of employees in a group to become dissatisfied with their employment for the same reasons, and so long as their departure was not part of a premeditated plan, concurrent resignations could not be regarded as a sinister conspiracy.

Next week, the conclusion of this two-part series will explore the scenario where an employee departs to found a new venture — in direct competition with his former employer — and examines the legal quagmires that may arise during the post-termination period.

About the Author

Robert A. Spanner is an attorney with the San Francisco firm Severson, Werson, Berke & Melchior. Besides the upcoming book from which this article is excerpted, he has written articles on computer contracting and white-collar crime.

Spanner is a member of the science and technology section and the section on patents, trademarks and copyrights of the American Bar Association. He is chairman of the section on science and technology of the Commonwealth Club of California. He is also a member of the privacy committee of the ABA criminal justice section.‡

BUYING SOFTWARE?
LET InfoWorld
BE YOUR GUIDE

☐ *VISICALC™---WORDSTAR™---SPELLGUARD™---DBMASTER™---dBASE II™* are just a few of the software packages reviewed in *INFOWORLD*'s **CRITICS' GUIDE TO MICROCOMPUTER SOFTWARE.** Presented in this *new* publication are 40 reviews compiled from previous issues of *INFOWORLD*. These evaluations represent a cross section of software for a variety of personal computers.

Each review summarizes the product's features, evaluates performance, judges documentation and then rates the product from excellent to poor. What continues to make our software-evaluation process so popular and useful is our Independent Software Review Board. To ensure consistency of evaluation, all reviewers adhere to the same guidelines.

We think you'll agree that *INFOWORLD*'s **CRITICS' GUIDE TO MICROCOMPUTER SOFTWARE** will not only inform you, but will simplify your buying decisions. To order the **CRITICS' GUIDE TO MICROCOMPUTER SOFTWARE**, just fill out the following form.

☐**Yes, send me a copy of A CRITIC'S GUIDE TO MICROCOMPUTER SOFTWARE for only $4.95 + $1 postage and handling.**

☐My check is enclosed.

☐Am Ex ☐BA/Visa ☐MC

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ ☐☐☐☐

Cardholder's signature _____ Exp. date _____

Name _____

Address _____

City _____ State _____ Zip _____

Return form to:
InfoWorld
375 Cochituate Rd., Box 837
Framingham, MA 01701

Delivery from 4-6 weeks

Storage System Out For DG Superminis

MILPITAS, Calif. — System Industries, Inc. has extended its line of Data General Corp.-compatible storage systems with the introduction of a new option designed to allow up to 1G bytes of storage per controller on DG's 32-bit MV/6000 and MV/8000 superminicomputers.

The Model 3400 Storage System operates on the Burst Multiplexer Channel (BMC) of the MV/6000 and MV/8000 computers running on the AOS/VS operating systems. The system permits users to select storage devices with capacities ranging from a minimum of 50M bytes to a maximum of 1G bytes.

Emulation can be supplied using either removable disks or fixed Winchester-type drives, the company claimed. The option may also be configured in a dual-channel mode that permits two CPUs to access a common data base.

The system consists of a single board controller that can be installed into any high-speed peripheral slot for connection to the BMC bus. Also included in the package is a multiplexer panel mounted within the CPU cabinet, necessary cables and full documentation.

The basic Model 3400 Storage System is priced at $14,000 with a 30-day delivery time from System Industries, Inc., 1855 Barber Lane, Milpitas, Calif. 95035.

CEC Offers Micro System For Large NCR Mainframes

COSTA MESA, Calif. — Computer Enhancement Corp. (CEC) has introduced a microcomputer system that can be used to download or upload programs and data from large-scale NCR Corp. mainframes. The microcomputer can also be used to access data and peripherals tied into the NCR mainframe, use that data in microbased applications programs and send it back to the mainframe files, CEC said.

The Cemicro I consists of an enhanced version of a desktop microcomputer offered by NCR and Applied Digital Data Systems, Inc.; a minimum of 700K bytes of disk storage contained on two floppy disks; a printer; and Cemos, an operating system that is compatible with CP/M. Major elements of the operating system include an interface that allows the software to interface with NCR's Virtual Resource Executive (VRX) operating system and a transaction processing monitor.

Using the Cemicro I system, users can selectively access information contained in the mainframe's files and create intermediate working files, much like an intelligent terminal. However, once the files are taken from the mainframe, they can also be downloaded to a format recognizable to CP/M, which allows the user to utilize that data with a variety of microprocessor-based programs.

Once local processing is completed, these files can be stored back on the mainframe for further processing, printing or access through Cedata, an on-line inquiry and reporting system also offered by the firm.

Part of Distributed Net

In its basic form, the microcomputer can be used to offload the mainframe processing and relieve the host computer. However, in its expanded mode, the system can be used as part of a distributed processing network, a spokesman explained. In fact, the system can be installed at remote sites, operating as an RS-232C communications peripheral in NCR-compatible polled or nonpolled networks.

Software currently available for the system includes Ceword, a word processing system; Ceman, a data management application for entering, retrieving and updating data; and Ceplan, a financial planning tool.

A typical single-user Cemicro I system with 64K bytes of memory and 700K bytes of floppy disk storage starts at about $18,000. This price includes a printer, some applications software and the Cemos operating system, CEC said from 3189-E Airway Ave., Costa Mesa, Calif. 92626.

Workstation Designed to Speed Trader Access to Data Services

NEW YORK — A system designed to expedite stock-trader access to several information services has been developed here by Systems Strategies Equipment Corp.

The Vaq workstation consists of a single keyboard that provides traders with instant access to in-house systems and outside services and from one to eight video display units, each of which can receive data from various inside or remote sources, according to the vendor. The trader controls the system by operating the keyboard, accessing services including Reuters Ltd. and Telerate, the vendor said.

The keyboard can be standard or customized to meet a particular trader's preferences. The central-site equipment includes video switch units, function controllers, terminal emulation units, links to wire service controllers, in-house systems and communications processors. It is capable of emulating multiple terminal types including those of Reuters, Telerate, IBM and Digital Equipment Corp. An optional processing system can be installed to allow the trader to interface international Telex, public packet-switching networks or in-house communication systems.

The basic Vaq system costs approximately $4,500 per three-screen station, a Systems Strategies Equipment spokesman said from 225 W. 34th St., New York, N.Y. 10001.

Graphics System Gets Enhancements

SALT LAKE CITY, Utah — Evans & Sutherland Computer Corp. has announced four enhancements for its Picture System (PS) 300 graphics system.

The firm has integrated its Color Shadow Mask/Calligraphic Display with the PS 300. It also added a hard-copy interface with a hardware raster device, an interactive set of 32 lighted function buttons and a Digital Equipment Corp. DMR11-AE interface for PDP-11 and VAX-11 hosts.

The Color Display and PS 300 together reportedly can generate interactive, complex, three-dimensional images in more than 1,800 program-selectable colors.

The base price for a PS 300 graphics terminal is $78,050; with the color option, it is $116,150. Evans & Sutherland is at 580 Arapeen Drive, Salt Lake City, Utah 84108.

Two "IBM 3270" printers IBM can't sell you.

ISI 387 Dot Matrix Printer
Plugs into your IBM 3270 system. Faster, lighter, quieter and costs less than an IBM 3287. Available in only 60 days!

ISI 736 Solid Type Printer
Plugs into your IBM 3270 system. Where IBM doesn't offer a letter quality printer at all, ISI has a proven model!

Interface Systems, Inc.
462 Jackson Plaza
Ann Arbor, Michigan 48103. (313) 769-5900

Your report can get across the country faster than it can get to your mailbox.

The IBM 6670 Information Distributor

The IBM 6670 Information Distributor can get your report across the country, or across the street, in a matter of seconds.

Because it can send and receive information from many computers, text processors and other IBM 6670s.

And it doesn't print that information on computer paper.

It gives you two choices:

Legal or letter-size paper.

And that information is actually printed by a laser printer.

Which means that every copy is a printed original.

For special emphasis, it can reformat your reports. And offer up to four type styles per page.

Now with an optional feature, it can even print logos and signatures.

So if you need to get your finished reports from one place to another quickly, send them with the IBM 6670 Information Distributor.

You'll save time.

Not to mention stamps.

IBM.

Call *IBM Direct* 800-631-5582 Ext. 90. In Hawaii/Alaska 800-526-2484 Ext. 90.

With 64K-Bit Chip Technology

TI Introduces Multiuser Desktop Series

DALLAS — A series of high-performance, multiuser desktop computer systems that incorporate 64K-bit chip technology and up to 172M bytes of Winchester-based disk storage has been unveiled by Texas Instruments, Inc.

The Business System 300 series consists of five models — the 340, 350, 351, 371 and 372, each of which provides a different degree of storage capacity, a TI spokesman said.

All the systems have at least 128K bytes of error-correcting main memory that can be expanded to a maximum of 512K bytes, according to a TI spokesman.

The System 300 machines, which are the third series of business systems introduced by TI since October 1981, are housed in a single enclosure that includes a CRT terminal and a detachable keyboard. The microprocessor-controlled CRT unit features a 12-in. diagonal screen with an 80-col by 24-line display.

Antiglare filters and a tilt base are available as options, the spokesman noted. The keyboard has 94 keys with a full 128-char. Ascii set, eight operator programmable keys and a 10-key numeric pad, the spokesman added.

The Business System 300, which is said to be the lowest priced multiuser computer system offered by TI, can be expanded to a three-terminal system using an optional two-channel communications board that has two terminal ports.

Each add-on terminal can support a printer, and each system can accommodate a total of three terminals and three printers.

The communications board also provides the System 300 with support for TI's 3780/2780 communications software package providing remote job-entry communications with IBM or other host computers, as well as interactive communications, the TI spokesman said.

The 300 series uses TI's DX10 general-purpose, multiuser operating system, which supports

(Continued on Page 52)

The System 350 uses the WD500 disk subsystem, which stores 5M bytes of data on a 5¼-in. Winchester disk.

TI Cuts Prices On 200 Series

DALLAS — Citing market demands and competition, Texas Instruments, Inc. has reduced prices by up to 20% on its single-user Business System 200 series desktop computers.

Effective immediately, the cost of the firm's System 220, with two 600K-byte flexible drives, is less than $5,000. Previously, the system was priced at $6,200.

All System 200 computers — the 220, 240, 250 and 251 — include 64K bytes of program memory and are housed in a single cabinet along with a CRT screen display. They can be fitted with one of four disk subsystems, offering capacities up to 1.2M bytes, and can support an optional TI Model 840 dot matrix printer. The systems were brought out about a year ago, a TI spokesman said.

Super System Incorporates Z80 Slave Unit

GARDEN GROVE, Calif. — Advanced Microdigital Corp. has announced Super System, an S-100-based microcomputer that uses Zilog, Inc.'a Z80 microprocessors as slave CPUs.

Each user is given his own memory and I/O capabilities. An unlimited number of users can operate on the Super System without noticeably eroding the performance level, Advanced Microdigital claimed.

In its most basic form, the system can be configured as a single-user system with the firm'a Super-Quad single-board master processor. The Super-Quad consists of a Z80 microprocessor, 64K bytes of bank-select dynamic random-access memory (RAM), 2K or 4K bytes of erasable programmable read-only memory (Eprom), a 5¼-in. or 8-in. floppy disk controller, two serial and two parallel I/O ports and a real-time clock.

The basic system also includes a power supply, chassis, eight-slot motherboard and two Shugart Associates, Inc. 801R single-sided disk drives.

Slave boards include Z80 microprocessor, 64K bytes (expandable to 128K bytes) of RAM and 2K or 4K bytes of Eprom. The slave units cost $650 each, the vendor said. A typical 16-user system, including the master system, costs about $15,000, Advanced Microdigital said from 12700 B Knott Ave., Garden Grove, Calif. 92641.

Keyfamily Line Gains Desktop Unit

BEDFORD, Mass. — The Masterkey 2301, a desktop computer featuring 40M bytes of hard disk storage capacity and a four-user capability, has been introduced by M/A-COM Office Systems, Inc. as an addition to the firm'a Keyfamily line of business computers.

The unit is fully compatible with the company'a 65U operating system and has 56K bytes of random-access memory. Through the installation of one memory board per user, the system can also be expanded to handle as many as four time-sharing users, a spokesman said.

Two parallel and four serial I/O ports and one of the company'a Keyring network ports are included to accommodate a variety of I/O devices, including printers and CRT terminals, the vendor claimed.

The 2301 incorporates the company'a dual microprocessor CPU and features options that include Digital Research, Inc.'a CP/M operating system, additional memory partitions for multiuser operation, dot matrix and letter-quality printers and business software packages, the vendor said.

The Masterkey 2301'a base price is $11,975. M/A-COM Office Systems is located at 7 Oak Park, Bedford, Mass. 01730.

Mass Storage Systems Line Unveiled, DEC-Compatible

REDONDO BEACH, Calif. — A series of Digital Equipment Corp.-compatible mass storage systems featuring Winchester disk technology and high-speed streaming tape backup has been unveiled by Group III Electronics, Inc.

The Guardian 100, 200 and 500 for end users and OEMs carry prices lower than or comparable to the DEC offerings, Group III claimed.

Each system can be equipped with up to four Fujitsu Ltd. Winchester disk drives and a Cipher Data Products, Inc. streaming tape drive, while a selection of controllers is offered to allow each of the systems to match virtually any DEC VAX-11, PDP-11 or LSI-11 minicomputer, the firm said.

Furthermore, the Guardian line is compatible with all major DEC bus architectures, including Q-bus, Unibus, 11/70 and Mass-bus and runs under RT11, RSX11M, RSX11M+, RSTS E, VMS and Bell Laboratories' Unix operating systems.

The 100 is configured around a Fujitsu 8-in. drive, with an unformatted, per-drive capacity of 84.4M bytes; the 200, with 168.5M bytes unformatted, uses a Fujitsu 14-in. drive; and the 500 has 474.2M bytes unformatted and employs Fujitsu's 10½-in. Eagle package, the company said.

The price per unit, based on one tape drive, tape backup and controller, is $12,500 for the Guardian 100, $15,500 for the 200 and $20,500 for the 500 from Group III Electronics, 2615 Manhattan Beach Blvd., Redondo Beach, Calif. 90278.

Memories Fit Wang Minis

NEWTON, Mass. — A line of memories compatible with the Wang Laboratories, Inc. VS series of minicomputers has been introduced by EMC Corp.

The memories are available in increments of 256K bytes, 512K bytes and 1M byte and are said to offer two features not found on standard Wang memories: an error light that indicates when the memory has detected a fault and an off-line switch that lets a user electrically disconnect the memory without removing it from the chassis.

The memories are said to be priced approximately 60% below similar devices offered by Wang. The 1M-byte memory costs $9,500, with quantity discounts available from EMC, 385 Elliot St., Newton, Mass. 02164.

Speech Synthesizer Released For DEC Q-Bus Systems

SUNNYVALE, Calif. — Centigram Corp. has announced Lisa/DEC, a speech synthesizer for Digital Equipment Corp. Q-Bus systems.

The unit synthesizes speech at 4,800 bit/sec. The voice reportedly retains the natural cadence and tone of the original speech. Vocabulary for Lisa/DEC is synthesized from a bit stream previously encoded using the firm's proprietary digital voice technology. The bit stream passes to Lisa over an asychronous RS-232 communication line. Lisa decodes the bit stream and passes the data to the synthesizer, which reconstructs the original analog waveform, the vendor said.

Lisa/DEC consists of a Zilog, Inc. Z80 microprocessor with 64K bytes of random access memory, a 16-lattice filter, 4W amplifier and two serial ports. The unit is mounted in a quad-size circuit board.

Lisa/DEC costs $2,450, the vendor said from 155A Moffett Park Drive, Sunnyvale, Calif. 94086.

Two Low-Speed Printers Introduced by Racal-Milgo

FORT LAUDERDALE, Fla. — Racal-Milgo Information Systems, Inc. has introduced two low-speed printers that can be configured with the firm's stand-alone terminal systems and be shared by a variety of terminals as part of a cluster system.

The 4825 is an 80-col dot matrix printer that operates bidirectionally at 120 char./sec, with print-head life rated at 200 million characters, the vendor said. Its Ascii coding set contains 96 characters that are printed in upper and lower case at 10 char./in. density, while vertical-line spacing is switch-selectable at 6 or 8 line/in.

The 4295 is a free-standing heavy-volume printer designed to operate with no duty cycle limitations in a broad range of applications, the company claimed. It is a 300 line/min. unit that has a print comb mechanism that uses a special flexure technology to minimize wear and eliminate hammer sharing, the vendor said.

Both printers can be used in conjunction with any of the company's terminal products, such as the IBM 3270 emulation series, Bell Laboratories 8A1-compatible systems and any Sperry Univac Corp. emulation terminals, the company said.

The 4285 is priced at $824; it can be leased for $29/mo. The 4295 carries a purchase price of $6,333 and a lease price of $173/mo.

Racal-Milgo Information Systems is located at 6250 N.W. 27 Way, Fort Lauderdale, Fla. 33309.

TI Announces Desktop Series

(Continued from Page 51)

a wide variety of languages and productivity aids. Programs can be written in Cobol, Basic, Pascal and Fortran.

Programs developed on TI's lower end 200 series computers can be switched to the 300 series with no modification, TI said.

Each 300 series machine can support up to four 43M-byte TI-manufactured Winchester disk drives and two types of printers: the firm's Omni 800 Model 840 printer, which prints bidirectionally at 75 char./sec; and the Omni 800 Model 810, which can print bidirectionally at 150 char./sec.

Prices range from $9,995 for the System 340, which provides 5M bytes of formatted data storage and an integral 600K-byte flexible-disk drive, to $21,800 for the high-end System 372, which has 43M bytes of Winchester storage and a 14.5M-byte magnetic cartridge backup drive.

Shipments are scheduled for the fourth quarter of this year. TI can be reached through P.O. Box 202146, Dallas, Texas 75220.

IMS-ADF
TRAINING
ADF Basic Workshop
ADF Overview for Managers
ADF Special Features
Call: (516) 536-3264
or
Write: BABB COMPUTER ASSOC
333 N. Village Avenue
Rockville Centre, NY 11570

Local Net Boasts Software Support For IBM Micro

MILPITAS, Calif. — Orchid Technology, Inc. has introduced a high-speed local-area network with full system software support for the IBM Personal Computer. With this network, a group of Personal Computer users can share one or more high-capacity hard disk units, eliminating the need for floppy disk storage.

The PCnet system features transmission rates up to 1M bit/sec and distances up to 7,000 feet. Files can be shared and transferred among users and a protection system ensures that only the file's owner can erase it, according to the vendor spokesman.

The network also offers resource-sharing and multitasking by remote execution of commands. A printer attached to one Personal Computer can be shared by all others. In addition, a Personal Computer with a large memory and fast disks can be used as a common resource to compile programs, the vendor said.

PCnet is available at Computerland stores or from Orchid Technology, Inc., 1084 Hillview Drive, Milpitas, Calif. 95035.

Job Type	Total 1970	Total 1980	Change
Professional/Technical	11,140,000	15,613,000	+40.2%
Managers/Administrators	8,289,000	10,919,000	+31.7%
Salesworkers	4,854,000	6,172,000	+27.2%
Clerical	13,714,000	18,105,000	+32.0%
TOTAL WHITE COLLAR	37,997,000	50,809,000	+33.7%

Source: U.S. Bureau of Labor Statistics

U.S. Employment Totals by Job Description

OA Not Just WP Anymore; Low Cost, Larger Work Force Make It DP Industry's Hot Issue

By Thomas Willmott
Special to CW‡

Office automation has emerged as the computer industry's hot issue for two reasons: The dollar impact of office workers on the economy is enormous, and information processing power is increasingly available at lower cost. These two factors have led to a tidal wave of vendor-developed "integrated office solutions" and user-appointed office automation task forces.

Until recently, office automation equaled word processing. The benefits of that technology were clear: elimination of substantial amounts of rekeying, rapid access to stored documents and flexibility in the revision process.

It has become evident, however, that providing additional electronic tools to professional, managerial, scientific and research workers will have a much larger impact upon total organizational productivity than word processing alone has achieved to date.

Dramatic Cost Increase

The cost of managing information has grown dramatically. During the 1970s, the number of white-collar workers rose to 50 million, and by 1980 that number represented more than half of the total U.S. work force, at a cost of some $13 billion a week.

In every white-collar category, the employee gain from 1970 to 1980 exceeded 33.7%. Furthermore, there are nearly 10 million more professionals, technicians and managers than secretarial and clerical workers in the U.S.

The fact that professional, technical and managerial personnel comprise not only the most numerous, but also the most expensive job category, demonstrates ample need for increasing efficiency and effectiveness as quickly as possible. The decreasing cost of information processing technology offers a variety of alternatives for improving the productivity of these workers.

Ideally, an integrated office solution for professionals should include such functions as on-line access to organization data, a variety of business applications —including modeling and forecasting — electronic messaging and the ability to build and manipulate personal and department files and graphics. These, in addition to a powerful text-processing package, are the functions that will impact positively the group's professional effec-

(Continued on Page 54)

Mail Package for PDP-11 Users Tracks Communications Flow

LOS ANGELES — An electronic mail software package for Digital Equipment Corp. PDP-11 minicomputers that reportedly encourages correct communications skills and helps the originator complete each communications cycle is available from Executive Software, Inc.

Exectronic Mail was designed for PDP-11s running under the RSTS operating system. User messages are automatically separated into "in," "pending" and "out" baskets. The out basket reportedly contains a log of all outstanding orders or messages requiring a response so that the originator can follow up until all his communications have been answered.

The system automatically lets the originator know his message has been delivered, verifies 100%-accurate transmission of the message to the recipient and provides facilities for the originator to monitor the message to ensure he gets the response, the vendor said.

A communications series of any number of origins and responses can be maintained within available disk storage capacity. The series is maintained in date order and is always available for review until terminated by the originator.

Any executive on the system with authorization can make his own copy of a message and send it to anyone else he wishes for review without having to recreate the document itself, the vendor reported.

The Exectronic Mail package costs between $18,000 and $50,000, depending on computer configuration, Executive Software said from 2024 Hollyvista Ave., Los Angeles, Calif. 90027.

OASI Elects Oyer, Sets Meeting Date

WASHINGTON, D.C. — Paul D. Oyer has been elected president and executive director of the Office Automation Society International (OASI). Oyer was deputy director of the Diebold Group Research Program on Automation and Management.

OASI, which is dedicated to the promotion of professionalism and business in the office automation field, will hold its annual conference here Dec. 13-15. The conference theme is "Office Automation for Management Productivity." The registration fee is $395.

OASI can be reached through P.O. Box 31, Washington, D.C. 20044.

DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS

SATURN-CALC
ELECTRONIC FORECASTING AND FINANCIAL MODELING

Available for immediate delivery

- Provides multiple worksheets in a file
- Outputs ASCII files compatible with WP SATURN and other applications
- Written in assembly language
- Supports most common CRT's — VT100, VT 52, ADDs, Hazeltine...
- Provides help text and prompts
- Supports variable width columns

FOR MORE INFORMATION CALL
800-328-6145

SATURN
SATURN SYSTEMS, INC.
6875 WASHINGTON AVENUE SOUTH, SUITE 218
MINNEAPOLIS, MN 55435 • 612/944-2452

DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS

BRYCE'S LAWS
ON INFORMATION SYSTEMS

"The only way that an Information System communicates internally and externally to other Information Systems is through Data."

This is one of the laws embodied in the "PRIDE"-Automated Systems Design Methodology. "PRIDE"-ASDM is an integrated and automated approach for engineering and manufacturing Information Systems. It is a straight forward business approach that is governed by the inherent principles of systems design & development. For more information on "PRIDE"-ASDM and a free poster on "Bryce's Laws", write:

m. bryce & associates, inc.
1248 Springfield Pike • Cincinnati, Ohio 45215
Tel: 513/761-8400
"Software For the Finest Computer-The Mind."

OA, Microcomputer Courses Offered to Fortune 500 Firms

STERLING HEIGHTS, Mich. — D.L. Hiller and Associates is offering its professional education courses to Fortune 500 companies. Two of the courses include "The Personal Computer: Strategies for Managing" and "Office Automation: Tee to Green."

The former was designed to help participants develop a familiarity with available personal computers, understand buyer motivations for personal computers and develop a technical knowledge of the hardware and software limitations.

The latter helps participants learn how to apply the office automation development life cycle to particular situations; how to integrate office automation, personal computing and mainframe-based information systems; and how to define the benefits and costs under various approaches to automating the office, the vendor said.

The courses cost $800/day. D.L. Hiller and Associates is located at 14536 Island Drive, Sterling Heights, Mich. 48078.

OA Emerging As Hot Issue

(Continued from Page 53)

tiveness.

The need to define and justify additional "soft-dollar" benefits is a major organizational stumbling block. Reliable studies that document the exact value of office automation features through cost/benefit analysis simply do not exist.

Users of advanced office technology have been forced to experiment on faith.

For example, is there a measurable time savings associated with electronic mail? How will delivering on-line, corporate financial data to staff planners or corporate executives impact corporate profits? Will the quality of decision making really improve? Can firms avoid hiring additional personnel by investing in the automation of the existing work force? How will office automation impact morale? Will personal computing increase a firm's competitive edge?

While office planners debate productivity and cost justification issues, personal computer vendors have been busy making deposits in the bank. International Data Corp. (IDC) estimates that there were more than one million personal and desktop computers installed in homes, schools and businesses in the U.S. at the end of 1981.

Willmott is an account manager at IDC, a market research firm based in Framingham, Mass.

BCS Your Partner in Programmer Productivity

The BCS INTERACTIVE PROGRAM DEVELOPMENT (IPD) SERVICE offers you what you need, when you need it. Full-screen support. High performance systems. Application generators. Information management tools. Development service for the occasional crunch—or steady demand. In total, service that's an economical extension of your in-house resources... and all structured around complete IBM compatibility.

With the IPD SERVICE, you can choose from BCS' MAINSTREAM®-CTS (VM/CMS) or MAINSTREAM®-TSO (MVS) remote computer services for application development and program maintenance, using on-line productivity aids selected to meet your specific needs. It's all brought to you via Boeing's national network and available through IBM 3270 display terminals using either dial-up or dedicated access. And it's supported by a company with years of experience servicing the computing needs of government agencies and major businesses, including The Boeing Company. For more on the IPD story, call your local BCS sales office and ask for our brochure, or write to: Ms. Nancy Weiskopf, Boeing Computer Services Co., 7980 Gallows Court, Vienna, VA 22180.

BCS and YOU—Partners in Productivity; Teamwork for Tomorrow.

BOEING COMPUTER SERVICES COMPANY
A division of The Boeing Company

Need Low Cost FULL COLOR Printing

MODELS FOR ALL CRT HARDCOPY NEEDS

DECOLOR upgrades you DEC LA-120* to print text or graphics fast for only $995. Avoid the extra expense, low-reliability and added complexity of pen-plotters, laser or inkjet color graphics copiers with the proven ANSI Standard LA-120* DECOLOR printer/ plotter.

Available now from Texprint or DEC distributors.

*Registered trademark of Digital Equipment Corp

TEXPRINT

Regional Report

Texas Looks to High Tech To Pull Up Economic Bootstraps

By Robert Batt
CW West Coast Bureau

Although Texas has long been basking in the glory of its reputation for economic plenty, the state is now struggling in the midst of a recession. And like residents of other states in the union, Texans are putting great emphasis on increasing their already sizable investment in computer-related industries.

With over 97,000 people currently employed in electronic industries statewide and with over 850 electronic manufacturers within its boundaries, Texas has established itself as a major competitor for the fledgling computer technologies of the 1980s.

In a sense, the state has become a victim of its own success. A rapidly expanding industrial base has led to such a huge influx of people into the state, that it will now require the creation of 170,000 new jobs a year (net gain) in order to maintain current employment levels.

The answer, many state planners believe, lies in the high-technology sector. "The slump in the energy industry has given us a new impetus to search for high-tech industries. We were in danger of becoming a one-industry state," asserted Joseph Ferran, manager of industrial locations and services for the Texas Industrial Commission. In fact, production levels from the Texas oil and gas industry have been decreasing since 1972 — a dangerous trend given that, in a state devoid of personal income tax and corporate taxes, 27% of state revenue comes from the severance tax on minerals such as oil and gas.

According to state planners, a number of factors are essential if Texas is to compete with other geographical

(Continued on Page 66)

Boom Days Over?

By Robert Batt
CW West Coast Bureau

HOUSTON — Data processing specialists, those anxious to escape the grueling winters of the Midwest or New England or those who are fed up with the high cost of living on the West Coast, have been migrating in increasing numbers to Texas.

The oil-rich state with its 300-plus days of sunshine per year has appeared as an attractive proposition to many a programmer or analyst looking for a change of scene or pace. The state's population increased at an

(Continued on Page 66)

CDC Has Hopes for ISI Despite Ansi Resistance

By Marcia Blumenthal
CW Staff

NEWTON, Mass. — Despite resistance from the American National Standards Institute (Ansi), Control Data Corp. is hopeful that its recently announced Intelligent Standard Interface (ISI) will become a de facto standard for peripherals.

"The ISI is in the best position to become a de facto standard because we are delivering the hardware now," Patrick McMahon, a CDC consultant for OEM marketing, said during a recent interview here.

The demand for higher transfer rates is the reason a new interface is needed now, McMahon maintained. The Storage Module Device (SMD), currently the industry-standard disk interface, is not effective beyond the 15 MHz range, McMahon explained.

The ISI architecture, which uses very large-scale integration technology, is a common interface that can be used to link non-IBM disks, tapes or printers to host computers. ISI employs control modules specific to the peripheral being integrated into the system, which can perform error correction and have self-diagnostic features [CW, June 19].

CDC announced its ISI strategy at this year's National Computer Conference. However, Ansi has proposed its own standard, the Intelligent Peripheral Standard (IPI), and is lobbying to make it the new interface standard. There is nothing wrong with IPI, but specifications for the interface are not complete and CDC needs to go with what it has now, McMahon asserted.

In the past, Ansi has been a market follower — for example, adopting SMD as a standard — but with IPI Ansi wants to be a leader, he insisted, adding that IPI is modeled after the IBM

(Continued on Page 62)

Study: U.S. DP Firms Aiding Apartheid Through Exports

By Jake Kirchner
CW Washington Bureau

PHILADELPHIA — American computer firms, through a concerted and sometimes secret effort to exploit U.S. export regulations loopholes, have significantly enhanced South Africa's enforcement of its apartheid policies, a two-year study by the American Friends Service Committee (AFSC) here has charged.

While stopping short of accusing U.S. companies of widespread illegal sales to the Pretoria government, the committee's report indicts the major American firms, including IBM, Control Data Corp., Burroughs Corp., NCR Corp., Sperry Rand Corp. and Hewlett-Packard Co. for "corporate complicity" in South Africa's efforts to maintain white domination of that country's large nonwhite population.

Estimating that American companies account for 75% of all computer sales to South Africa, the AFSC report, released last week, said "U.S. computer corporations ... virtually control the South African computer market, a function which allies them with the apartheid apparatus and involves them in the maintenance of minority rule.

AFSC describes itself as an independent Quaker organization devoted to furthering human rights and disarmament. The South Africa report was the result of two years of research by an AFSC project called National Action/Research on the Military-Industrial Complex.

The report's charges are not new and the issue has been a thorn in the side of the U.S. computer industry for years. By and large, the major American firms have insisted they do not sell equipment, software or services to South African organizations they know to be actively engaged in any racial repres-

(Continued on Page 56)

UNITRONIX means DEC

PDP 11/23 SYSTEMS with 2 Mbyte memory, 160 Mbyte winchester, std. 45 ips 9-track tape backup, CRT, printer. Will run RSX11, RSTS, TSX or UNIX. $34,000

TERMINALS
VT100 LA12
VT101 LA34
VT102 LA50
VT125 LA100
VT131 LA120

CPUs
PDP 11/23, 11/44 & VAX

INTERFACES
MODEMS

COMPLETE DATA SYSTEMS
with standard and custom software

SPECIAL
LSI-11 MODULES, PERSONAL COMPUTERS

CALL FOR LATEST PRICES
(201) 231-9400

UNITRONIX CORPORATION

VAX
SPOKEN HERE!
ONLY ONE
ACCOUNTING, MANUFACTURING
SOFTWARE COMPANY
SPEAKS THE
LANGUAGE OF VAX...
INTERACTIVE
MANAGEMENT SYSTEMS
ims
VAX Spoken Here!
For free IMS Software Portfolio, clip and mail to: Interactive Management Systems, 375 Concord Ave., Belmont, MA 02178-3094
Name
Company
Address
City
Title
State
Zip
Phone
CW/9-20

U.S. DP Firms Insist They Abide by Export Restrictions

By Jake Kirchner
CW Washington Bureau

The issue of selling computers to South Africa is a constant source of pain for U.S. companies, which continue to insist that they abide by all American export restrictions and would not in any case sell equipment for repressive end uses.

But if firms insist they will not sell to repressive South African agencies, they also willingly acknowledge they have little, if any, control over where their products end up once they reach South Africa. "That equipment can be used for anything," one industry spokesman said.

Another industry representative, who requested anonymity because of the sensitive nature of the topic, commented that, by and large, U.S. firms are more interested in maintaining their market shares than in adopting a moral position on South Africa's racial policies. "It is strictly business," he said. "Companies that are in South Africa have worked damn hard for that marketplace."

Indeed, the U.S. computer industry strenuously opposed the 1978 American export restrictions covering trade with South Africa, arguing the regulations merely meant sales lost to British, West German and Japanese firms, which were capitalizing on markets developed by American companies.

However, IBM, for example, said its policy is "not to bid on business anywhere in the world where we believe our equipment will be used for repressive purposes, and we know of no case where it is so used." Company spokesman John Reilly, in Armonk, N.Y., added, "We believe IBM should be able to do business where and with whom the law allows ... and where we can remain faithful to our policies and beliefs."

Won't Increase Investments

Some firms, such as Burroughs Corp., have agreed not to increase their investments in South Africa, but insist on their rights to continue to sell in that market as U.S. laws allow. Burroughs has a formal policy that company representatives must not sell equipment "for oppressive purposes ... or service or repair equipment used for such purposes," according to Jon Lowell, Burroughs director of communications at company headquarters in Detroit.

Both companies' spokesmen also argued the presence of their firms helps nonwhites in South Africa by affording them job opportunities they would not have with South African companies. The option U.S. firms face, Lowell said, is: "You try to improve tha way of life within the country or you walk out."

Now that those restrictions have been almost completely lifted, the industry point of view generally is that it is ridiculous for opponents of South African racial policies to expect American firms to resist selling in that lucrative market if it is legally permissible. After all, it is often noted by computer industry representatives, even African countries are doing business in South Africa.

Firms Aid Apartheid: Study

(Continued from Page 55)

sion. They also argued manufacturing operations and sales organizations in South Africa supply much-needed jobs for the country's nonwhites.

A 1978 U.S. embargo of all sales to South African police or military was significantly relaxed earlier this year. But even during the embargo, U.S. firms tried to evade export restrictions by selling through foreign affiliates, the AFSC study charged.

The study quoted a purported 1978 State Department cable from the U.S. embassy in Pretoria, reportedly obtained through a Freedom of Information Act request, which said: "Multinationals, including U.S. subsidiaries, are determined to undercut any sanctions action and have already made plans to camouflage their operations through subterfuges arranged with affiliates in other countries."

Civilian Agencies

The study also noted the embargo did not address sales to civilian South African agencies which, AFSC said, are engaged in maintaining the apartheid social and economic structure.

For example, the South African Interior Department, until recently, used IBM equipment to maintain the country's internal identity document system for nonblacks. IBM said last week that it lost the bid to continue supplying equipment to that agency.

The Plural Affairs Department uses ICL Ltd. computers containing numerous U.S., particularly CDC, components for a system to document the identity and travels of blacks, the study said.

The report also noted there is no way to control the end uses of much of the equipment sold to South Africa to ensure it does not end up in military or police hands. The study documented, in great detail, the various types of equipment from dozens of American electronics firms being used by South African organizations, civilian and military.

In general, the study concluded, the South African government would not be able to continue its apartheid policies without the support of a great deal of computer power, most of it supplied by American firms. Annual IBM sales in South Africa total approximately $300 million, AFSC said, adding that Burroughs increased sales 45% in 1979, the year after the embargo was instituted, and NCR, third largest U.S. supplier, increased its sales 16% in 1978.

Calling these sales "a shameful manifestation of complicity with white minority rule," AFSC called for tighter U.S. export restrictions and suggested employees of American firms should disclose planned sales and shipments of high technology to South Africa to dramatize the extent of such transactions.

How to avoid the vendor treadmill *and* simplify your input and output.

Perplexed by the need to search for a different vendor every time a new processing application arises?

Consider Sun Information, a multi-service d.p. company that can help you avoid the vendor treadmill.

Our people are specialists at developing innovative solutions to knotty computing problems. Chances are good that, among the over 40 systems we offer, several will fill your processing requirements.

For example, consider these input and output options:

• For data input FASTFORM Data Entry System. A friendly system for easy and immediate online data entry. Any user with a 3270-type video screen can create an input form suited to individual application needs. FASTFORM also links to your programs, and lets you validate, edit, retrieve, and update records with a minimum of perplexity.

• For data output Sun Remote Printing Facility (SRPF). A flexible, economical way to get the advantages of an RJE capability via low-cost, 3270-attached printers. Because SRPF permits them to receive spooled JES SYSOUT, you can use less expensive printers at many of your remote locations, and reduce line and modem costs. And we provide a 30-day free trial for qualified companies.

For more information, write to Sun Information Services Company, 280 King of Prussia Road, Radnor, PA 19087. Or call your nearest Sun Information office:

Boston, MA (617)542-1207
Chicago, IL (312)951-8340
Cleveland, OH (216)574-2266
Dallas, TX (214)987-7500
Houston, TX (713)961-2701
Irvine, CA (714)851-1999
Los Angeles, CA (213)208-1329
New York, NY (212)753-3675
Philadelphia, PA (215)972-4088
Tulsa, OK (918)586-6683
San Francisco, CA (415)986-1323
Southeastern U.S. (215)293-8350
Canada (215)293-8350

Sun INFORMATION SERVICES COMPANY

Copyright 1982 Sun Information Services Company

YES! I NEED MORE ACCOUNT-ABILITY

- ☐ Send me more information on the Software International General Ledger and Financial Reporting System.
- ☐ I need more account-ability NOW. Have a representative call me immediately.
- ☐ Send me information on Software International's ongoing series of free seminars.

Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Telephone ( ) _____

Type of computer system _____

SOFTWARE INTERNATIONAL®

GENERAL LEDGER

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 216 ANDOVER, MA

POSTAGE WILL BE PAID BY

SOFTWARE INTERNATIONAL®
Elm Square, Andover, MA 01810

SOFTWARE INTERNATIONAL

The Software

GENERAL ELECTRIC

MORE ACCOUNT-ABILITY

SOFTWARE INTERNATIONAL'S GENERAL LEDGER

CONFIDENCE IN EVERY PACKAGE

CALL TOLL FREE 1-800-343-4133

Offered to OEM Market

NCR Hops on 32-Bit Bandwagon By Announcing Four-Chip Set

DAYTON, Ohio — NCR Corp. has hopped aboard the 32-bit chip bandwagon with the announcement of a powerful four-chip set that the company will market to other computer manufacturers.

NCR officials claim that their company is the first computer systems manufacturer to offer the 32-bit chips to the OEM market.

Moreover, NCR is touting the 32-000-series chips as the only such large-scale microprocessor capable of general-purpose emulation.

This feature will allow systems built around the chip set to be designed for compatibility with a manufacturer's own tried and tested operating systems, NCR officials said.

"There is no other 32-bit chip that offers this [emulation] capability, as far as we know," said John McCoy, an NCR spokesman.

According to McCoy this capability coupled with NCR's marketing of the chip to other manufacturers makes the announcement "very unique."

The chips' densely packed architecture will allow manufacturers designing processors around them to effectively reduce the size of a medium-power minicomputer about fivefold, from the size of an office desk to that of a bread box, according to McCoy.

This architecture will reportedly also reduce energy consumption by about 85% over present electrical use in processors using the chips, McCoy said.

McCoy said that NCR's marketing team has not yet begun pushing the chip set, and thus has not accepted any orders.

Sample sets will reportedly be available the first quarter of 1983, with general shipments slated for later in the year.

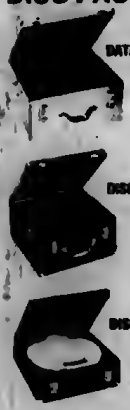
The company has not yet settled on a price for the chip sets, McCoy said.

NCR's chip unveiling comes on the heels of another 32-bit announcement made last May by National Semiconductor Corp. Nationals' announcement called their new product "the first microprocessor with a full 32-bit architecture"[CW, May 31].

National Semi's announcement of its NS16000 series was reportedly followed by a flurry of vendor pledges to use the chips in a host of soon to be developed DP and office automation products — an indication of the demand for 32-bit microprocessors by systems manufacturers.

Otherwise, Intel Corp. is the only other company that offers an internal and external 32-bit architecture with its three-chip iAPX432 set unveiled in August 1980 and marketed for the first time this year.

ALUMINUM DISC PACK CASES



#5142 DATA MODULE CASE
One 3340 Data Module or equivalent

#5140 DISC PACK CASE
CAPACITY—
1 3336 Disc Pack
3 Phoenix Cartridges
3 5440 Cartridges
5 2315 Cartridges

#5138 DISC PACK CASE
CAPACITY—
2 Phoenix Cartridges
2 5440 Cartridges
3 2315 Cartridges

See your local dealer, or call/write—
ALUMINUM CASE CO.
DIVISION OF BY-LO MFG., INC.
(312) 247-4611

Itel Returns to DP; Selling Software in Europe

LONDON — Itel Corp., the high flyer in computer hardware leasing that crashed after IBM introduced its 4300 line, is giving the computer business another try — this time selling software in Europe.

The venture, Itel Software Systems, was proposed to corporate management by Donald Davidson, Itel's European managing director, last year and received the go-ahead earlier this year. The new software business unit reportedly signed its first distribution arrangement in April with Access Technology, Inc., a firm that has financial modeling packages called Supercomp and Supercomp 20 that run under Data General Corp. systems.

Itel Software Systems is launching its marketing effort with applications software primarily for DG hardware, because there are not as many competitive products, Davidson said. However, the firm expects to expand its horizon, offering software that operates with other major minicomputer vendors' systems.

Right now the firm has five marketing representatives and one support specialist. Itel Software is currently selling primarily in the UK market, but will expand into other European markets, said Davidson.

Besides Supercomp, Itel Software also represents products from two other software firms. One is C/Script II, an application development and management system from Commercial Systems Corp. of Auburn, Ala.

The other products, from Information Processing Techniques, Inc., include Tips, a word processing package, Tracer, a Fortran debugging tool and a C Compiler.

Supershorts

Applied Technology Ventures, Inc. (ATV) has signed a letter of intent with Evolution Technologies, Inc. to assume management of Evolution. By joining ATV, Evolution expects to benefit by reduced overhead in manufacturing services, increased sales through ATV markets and expansion of Evolution's product service from 13 to more than 75 cities through the existing ATV maintenance network, according to an Evolution spokesman.

Benefits to ATV include access to new technology developed by Evolution for data intensive products and access to Evolution's OEM and dealer outlets.

— — —

Plessey Peripheral Systems, Inc. has restructured its domestic operation with the creation of two autonomous business units.

The Computer Products Division will market memory boards, controllers and communication devices while the Systems Division will focus on vertical end user markets with Digital Equipment Corp.-compatible systems.

— — —

Steven P. Jobs, co-founder of Apple Computer, Inc., will be honored as "Outstanding Entrepreneur of the Year" on Sept. 23 at the University of Southern California's Fifth Annual Entrepreneur Awards Dinner sponsored by the Entrepreneur Program Advisory Council of the USC School of Business Administration.

— — —

Intel Corp. has created a centralized software distribution and support operation to provide system-level support and distribution for third-party software and support for Intel's software on a contractual basis. The new division is a successor to Intel's software distribution operation.

— — —

United Telecom Computer Group's United Information Services, Inc. has formed a new custom software unit, the Professional Services Operation. The unit will focus on consulting, application system design and analysis, custom/contract programming and education and training.

— — —

Softech Microsystems, Inc.'s Commercial Systems Division has been renamed the Commercial and Industrial Systems Division. The division will focus on industrial aystems, communications and on-line information systems and system software.

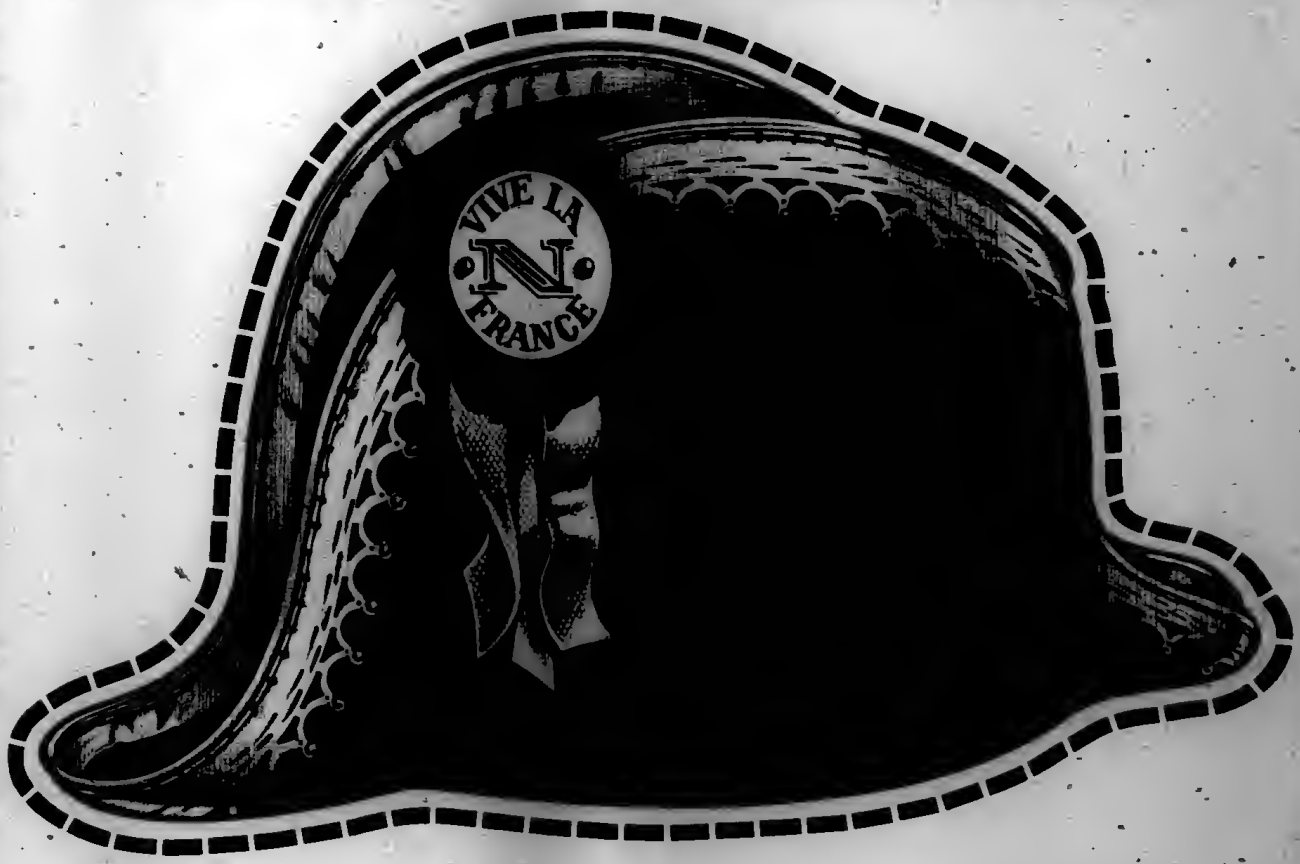
FLOW_Calc™
the VAX spreadsheet calculator
$3500
to try it yourself, call:
800-235-6788 (in California call 805 964 7724 collect)
The Software Workshop™
GENERAL RESEARCH CORPORATION • A Flow General Company
5383 Hollister Avenue • Santa Barbara, California 93111

ATTENTION
GEISCO
Time Sharing Users
Several new utility programs are now available on MARK III® service to give you better control over your storage and help you to save money
$75 Each
Included are utilities which permit flexible purging of similarly named files, catalog listings of file attributes including actual cost of each stored file, selective catalog listings by particular attributes of the files, and a PURGE LATER utility - which permits you to specify files to be deleted overnight, rather than immediately.
For more information, contact Information Software & Services, Inc., 10 Industrial Park Rd., Hingham, Mass 02043, or call us at (617) 749-2620.

IBM 34/38
COMPATIBLE LETTER QUALITY PRINTERS
30-510 cps replaces the 5256
connects via twin axial cables
nationwide service available
for info call: 617-275-0850 ext. 250
200-1000 Lpm printers also available
CONTINENTAL RESOURCES, INC.

How do you access the largest single source of information on software for APPLE, BURROUGHS, CP/M, DATAPOINT, HONEYWELL, IBM (third party), NCR, TRS-80 and a host of other computer systems — with satisfaction guaranteed?
Call
1-800-531-5955
In Texas, 512-340-8735
SOFSEARCH™
software locator service
The world's first software locator service.
CCS Incorporated PO Box 8278 San Antonio, Texas 78201

TEMPORARY INSANITY IS NO EXCUSE FOR BUYING THE WRONG DBMS.



If you're looking for productivity and performance in a database management system, (and who isn't?), you really only have two choices. Buy MODEL 204 DBMS from us at Computer Corporation of America. Or have a very good story ready for why you didn't.

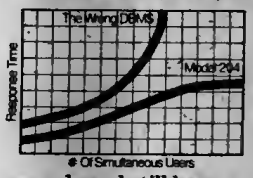
The reason?

MODEL 204 is the only commercial DBMS ever designed from scratch for on-line systems. Every other DBMS was converted from batch to on-line. And that means new applications come up faster with MODEL 204 and are easier to maintain.

But let's say you ignore our logic. And some salesman talks you into a DBMS that takes forever to get up and running. You may want to tell your management something like, "We're taking our time, sir, to get this thing right." And hope for the best.

And when the subject of performance comes up, just plead ignorance. "Who knew we'd need more capacity and faster response time?" you could say. "Who knew?"

Referring, of course, to the fact that your DBMS is struggling to carry a few million records and a few hundred users, while a DBMS like MODEL 204 can handle up to 513,000,000,000 records and still have 999 users doing simultaneous updates. And where MODEL 204 responds almost instantly to complex queries under heavy loads, you could grow a long beard waiting for some systems to respond.



And if all else fails?

Well, you can always cut out our little hat, and plead temporary insanity. Which, inexcusable as it seems, may actually be close to the truth.

Faced with the obvious superiority of MODEL 204 DBMS, you'd have to be crazy to buy anything else.

CW-9/20/82

MORE ON MODEL 204 DBMS.

OK, I've tried your argument on for size.

- ☐ Make a presentation.
- ☐ Send me a brochure.
- ☐ Let's put MODEL 204 in and benchmark.

Name _____ Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Telephone _____

Computer Corporation of America

675 Mass. Ave., Cambridge, MA 02139 (617) 492-8860

$10 Million Worth

Geisco Agrees to Buy IBM Micros

ROCKVILLE, Md. — General Electric Information Services Co. (Geisco) has signed a multiyear agreement with IBM to purchase $10 million worth of IBM Personal Computers.

The systems will be sold to Geisco's users as part of the firm's integrated applications program that combines a worldwide teleprocessing network, central processing and data base services with local processing facilities.

Geisco will be responsible for application support as well as hardware maintenance. The firm will also provide access to its network for users of other microcomputers, in particular, Apple Computer, Inc.'a Apple II Plus with Microcourier and Radio Shack's TRS-80 Model II.

Tandem, Stratus Settle Ad Campaign Lawsuit

SAN FRANCISCO — Tandem Computers, Inc. and Stratus Computer, Inc. have settled their litigation involving an advertising campaign designed by Stratus earlier this year.

The action in the U.S. District Court here was dismissed without prejudice.

Although Stratus declined to comment on the settlement, it did not involve any type of payment to Tandem, according to one company official.

Stratus will continue to advertise its products relative to Tandem systems, but has apparently toned down direct comparisons of its system and Tandem's products in its advertising copy.

Nickels & Dimes

The David Jamison Carlyle Corp. has signed a letter of intent with Lex Services, Inc., New York, a wholly owned subsidiary of Lex Service, PLC, London, to enter into a $10 million combination equity and financing transaction involving common stock, convertible loan notes and warrants and bank and financing guarantees.

$ $ $

Quixote Corp. has entered into a $4 million research and development contract to complete its proprietary process for manufacturing laser-read video disks. The contract is one of four included in a limited partnership public offering by Diversified Technology Partners, Ltd.

$ $ $

Data Terminal Systems, Inc., a maker of point-of-sale terminals, posted a $5.7 million loss for its second quarter and announced it is holding discussions for "a possible business combination."

$ $ $

Valid Logic Systems, Inc. has secured $7.2 million in the second round of venture capital funding. Investors include Advanced Technology Ventures, Vista Ventures, Capital Management, Interwest Partners, Menlo Partners and Merrill Lynch Venture Capital.

$ $ $

Media Systems Technology, Inc. has signed a financial agreement with the Bank of America for a $700,000 line of credit.

CDC Expects ISI to Succeed

(Continued from Page 55)

standard. Ironically, Ansi has just adopted SMD as the standard interface for disks — 10 years after it was put into operation, McMahon noted.

Countering Criticism

Countering criticism that the ISI operates only with 16-bit equipment, thus excluding the growing number of 8-bit devices, McMahon said that problem can be solved with an adapter and noted that micromakers are increasingly using 16-bit technology.

McMahon has spent the last couple of months explaining CDC's common interface strategy to competitors and major customers. All CDC's competitors for high-end peripherals have requested the ISI specifications for review, he reported.

The firm has already implemented ISI on its 8-in. Lark disk. CDC will implement ISI on its large disk and tape products next year and on printers during 1984 and 1985.

CCP ANNUAL EXAMINATION

THE DEADLINE FOR DECEMBER 11, 1982

The annual examination for the Certificate in Computer Programming (CCP) will be held on December 11, 1982, at selected test centers throughout the world.

Specific requirements for this year's examination are detailed in the "Certificate in Computer Programming Examination Announcement and Study Guide." The study guide and application form for the 1982 examination are available on request from ICCP.

Mailing Applications October 15, 1982

Please forward the "Certificate in Computer Programming Examination Announcement and Study Guide" along with application and test site list.

Name

Street Address

City State or Province Zip Code

Mail to: ICCP, The Institute for Certification of Computer Professionals, Certification and Testing Section
304 East 45th Street
New York, N.Y. 10017

IMMEDIATE DELIVERY
300 LPM PRINTERS

LOWER YOUR COST OF OWNERSHIP WITH PRICES STARTING AT..... $4995

AND MAINTENANCE FROM $36/MONTH

Compatible With Your:

- IBM 2780/3780 RJE
- IBM 3270 BSC Coax
- IBM Series I
- Burroughs Poll/Select
- Also DEC, Datapoint, Data General, Tandem, HP, and many others

800-327-3955

Innovative™
network data communications

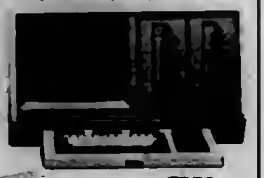
INNOVATIVE ELECTRONICS, INC. (305) 624-1644
4714 NW 165th Street, Miami, Florida 33014 Telex: 807121

We bring the best together with our fast new 3-mode printer

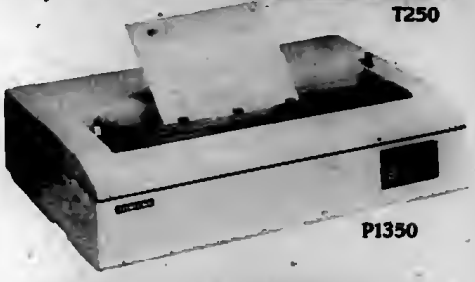
Advanced hardware and engineering by Toshiba. Innovative American software and strong sales support. Toshiba America combines them in easy-to-sell products with dealer prices and support tailored to help keep your competitive edge at its sharpest. Here is one example of our many advanced designs, shown with our T250 personal office computer.

P1350 LetterPerfect Printer

Our 3-mode prints letter perfect quality at 100 cps—twice as fast as the others. Prints 160 cps draft quality and its graphic capabilities are picture perfect! Our exclusive 24-replaceable pin printing head means easy, low cost maintenance. For full details, contact your nearest regional office today!



T250



P1350

THE BEST OF TWO WORLDS
TOSHIBA
TOSHIBA AMERICA, INC./INFORMATION SYSTEMS DIVISION

Corporate Office/Tustin, California/(714) 730-5000
Central Region/St. Louis, Missouri/David M. Johnson/(314) 991-0751
Eastern Region/Morristown, New Jersey/Albert J. Connelly/(201) 326-9777
Southern Region/Atlanta, Georgia/Michael J. Hutchinson/(404) 434-3891
Western Region/Irvine, California/Marvin McCurdy/(714) 540-5455

"It's time for all of us in Data Processing to put the personal computer to work for ourselves . . .

After 22 years in the data processing industry, I know we are often so busy putting together solutions for users that we don't have time to seek ways to improve our own productivity.

But I also know that the personal computer can be a tremendous boost to that productivity. . . *if you have the right software.* That's why we created THE PROFESSIONAL DATA PROCESSOR series of integrated personal computer software, specifically to meet *your* needs.

Prompt-Doc An automated documentation system which simplifies and standardizes user documentation development.

Spread Sheet A powerful planning tool to streamline budgeting, manpower planning, equipment analysis, etc.

Personal Records Management For maintaining personal files of anything from personnel skills inventory to physical inventory to names and addresses, etc.

Text Processing For all of your written correspondence.

3270/3780 Emulation To allow you to integrate the personal computer with your data network.

All Executec products are built around The Software Bus, a common connection which creates standard operating characteristics for all Executec products. Once you learn one, you know them all. And, there are more functions being added to this architecture all the time.

So put yourself on the road to productivity. Call today for details about THE PROFESSIONAL DATA PROCESSOR Series.

THE PROFESSIONAL DATA PROCESSOR series is currently available for the IBM, Xerox, Televideo, Victor 9000 and other personal computers.

CLIP AND MAIL TODAY:

☐ Tell me more about THE PROFESSIONAL DATA PROCESSOR Series

Name_____

Title_____

Company_____

Address_____

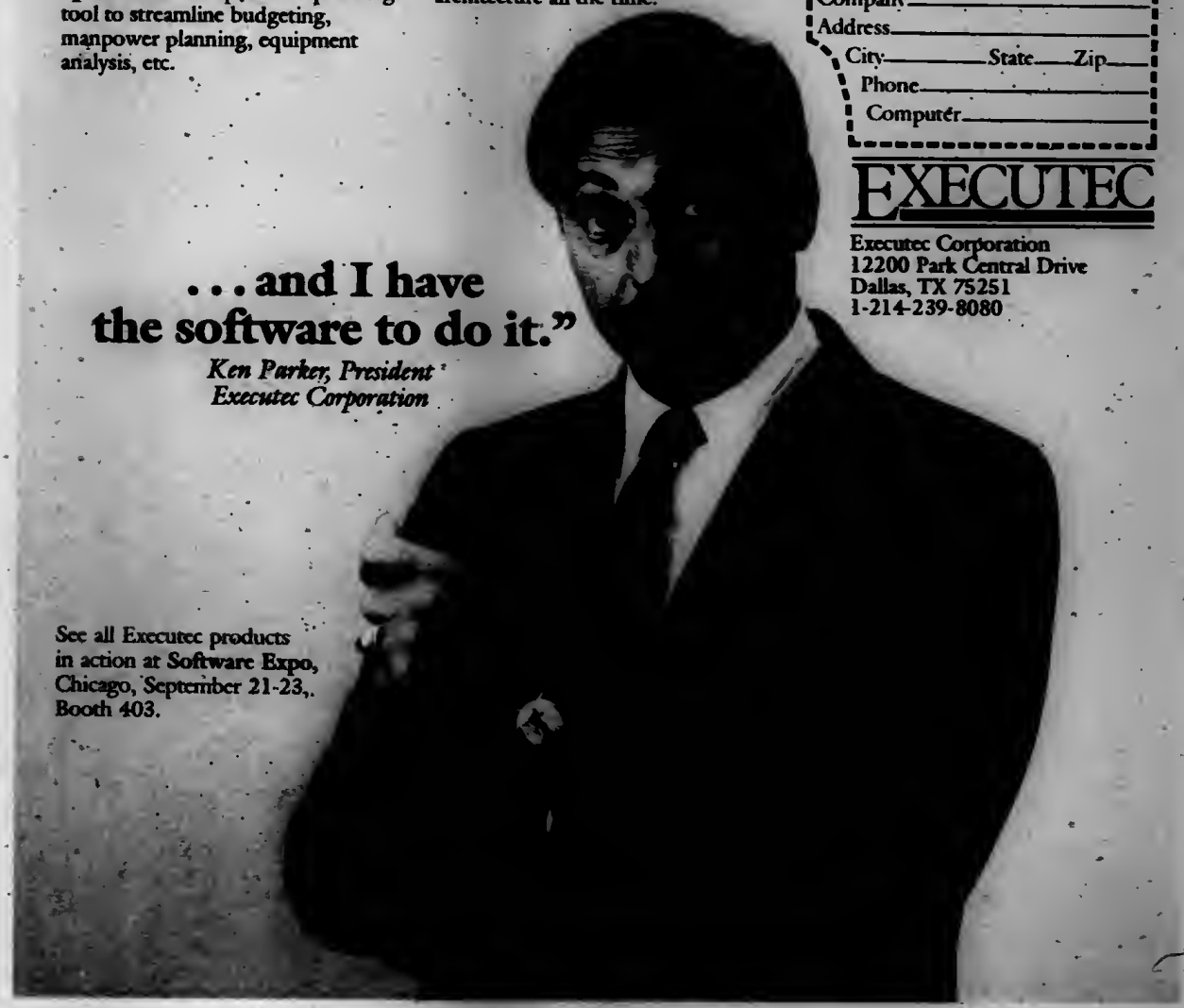
City_____ State____ Zip____

Phone_____

Computer_____

EXECUTEC

Executec Corporation
12200 Park Central Drive
Dallas, TX 75251
1-214-239-8080



. . . and I have the software to do it."

Ken Parker, President
Executec Corporation

See all Executec products in action at Software Expo, Chicago, September 21-23, Booth 403.

Executive Corner

• John Schlueter has been elected president of Grinnell Systems.

• Charles M. Clough has been named president of Wyle Laboratories' electronics marketing group.

• William M. Gibson has been appointed executive vice-president and chief operating officer of STSC, Inc.

• Lawrence Seligman has joined Datapoint Corp. as executive vice-president, office and computer products.

• Dennis S. Morton has been named vice-president, media development, for Ibis Systems, Inc.

• Kenneth A. Hales has been appointed vice-president and general manager of System Development Corp.'s system and software engineering division.

• G.R. Aguilar has been appointed to the newly created post of vice-president of marketing for Prime Computer, Inc.

• Russell G. Groshans has been appointed vice-president, satellite systems, at American Satellite Co.

• Carl P. Matte has been appointed vice-president and director of products assurance and distribution for Policy Management Systems Corp.

• George W. Leplante has been named vice-president of finance at Molecular Co.

• James M. Beisty has been appointed vice-president, business and planning; Larry J. Gerhard, vice-president, engineering; and Robert B. Cadmus, vice-president, manufacturing, for Decision Data Computer Corp.

• Alan W. Fink has joined Kornhauser & Calene, Inc. as executive director of the newly formed consumer electronics marketing group.

• O. John Howard has been named senior vice-president, director of advanced product planning; William Bond, treasurer; and Larry E. Jones, vice-president, director of marketing, for Rath & Strong Systems Products, Inc.

New Companies

Technology Information Systems, Inc. is a company providing maintenance support services and development, production and marketing of non-IBM data processing software. It is located at Suite 808, 2721 N. Central Ave., Phoenix, Ariz. 85004.

Executec Corp. is a firm specializing in the development and marketing of integrated business software for microcomputers. It is located at 12200 Park Central Drive, Dallas, Texas 75251.

Associates International is a new company offering improvement in administrative and information systems through quantitative measurement techniques. Complete management services are provided. The firm is located at 6107 Mountain Villa Drive, Austin, Texas 78731.

Andersen Bros., & Co. is a firm that specializes in providing and maintaining quality documentation for data processing user-companies and software vendors. It can be reached at 721 N. Kemah Lane, Schaumberg, Ill. 60193.

Expansions

Software Arts, Inc. has tripled its office space with a move to new corporate headquarters at 27 Mica Lane, Wellesley, Mass.

Softech Microsystems, Inc. has relocated to a new, 33,000 sq. ft. facility at 16885 W. Bernardo Drive, San Diego, Calif.

CIE Systems, Inc., a subsidiary of C. Itoh Electronics, has opened new corporate headquarters at 2515 McCabe Way, Irvine, Calif.

ATI Advanced Terminals, Inc. has moved its corporate offices to 7600 Thompson Road, North Syracuse, N.Y.

'The Old Files Came in Handy After All.'

TIRED OF BEING DUMPED ON?

LEARN HOW TO SOLVE THE TOUGHEST CICS INTERNALS PROBLEMS.

SysEd's CICS Internal Architecture course is for systems programmers and others who are up to their eyebrows in the toughest kind of programming, debugging, performance and recovery problems.

This demanding course eliminates the mystery surrounding the internal workings of CICS so that students have the knowledge and skills they need to approach both transaction and systems dumps confidently, and handle performance and application design problems in an organized, informed manner. There is no other source for this kind of in-depth training . . . *anywhere*.

SysEd's Internals courses are held weekly at our computer training centers in New York City, Chicago and San Francisco—or at your own location. Special weekend courses for consultants are available. For more information call Dave Shapiro 212-889-3386.

SYS-ED

ONE PARK AVENUE, NEW YORK, NY 10016 • (212) 889-3386

PRIME NEW USED COMPUTERS

BUYING, SELLING & BROKERAGE

Memory, Controllers, Peripherals • Complete Commercial • Applications Software

BRAND NEW EQUIPMENT

AMLC Boards (5154)	$3,975
AMLC Cables (1400 OR 1470)	195
8M Memory (1000 Boards (Prime)	16,500
Third Party:	
Memory – 1MB Board	10,000
Memory – ½ MB Board	11,250
Memory – ¼ MB Board	6,750
Tape Controller (Dual Density) 2001	3,500

EXPERIENCED EQUIPMENT

PRIME SYSTEMS

750 1 (4MB, 2X300, 75IPS, UBC, 6DLC 600, 2MB, 5154, 80MB, 45IPS-800-1600, UNC Super Day!
550 1MB 5154, 300MB, 75 IPS
550, 1MB, 5154
80 MB 45IPS 800 1600
550, 1MB

PRIME SYSTEMS

1100B (400L, 512KB, 2 80MB, 800 BPI, 600L/PM, 6 ADDS CRT'S
300, 300MB, 192KB, 45IPS
300, 192K, 80 MB, 77BK 6600PI

PERIPHERALS

80MB Disk Drive (4 Button Prime)	67,000
80MB Disk Drive (3 Button Prime)	6,500
Card Reader	2,000
Pertec 6600BPI Tape Subsystem	4,500
Dual Pertec Tape Subsystem (Old Style Cabinets)	3,500
6600PI Tape Subsystem	3,750
P300 CPU Set W/Floating Point	2,500

MEMORY (ALL PRIME)

E4 (256KB)	14,000
E8 (256KB)	5,000
64KB	1,000

NEW DISK DRIVES AND PACKS

CDC 300MB DRIVE, PACK	$15,000	CDC 300MB PACK	$825
CDC 80MB DRIVE, PACK	7,450	CDC 80MB PACK	385
CDC 675MB DRIVE	24,500*	CDC 16MB CMD PACK	205

*This is the matchless price. We will first install the drive on our system in Phoenix, burn it in for 2 weeks, ship it to you and supervise the CDC installation. Maintenance is only $127.00 per month. We pay the first year maintenance!

1st solutions

...The Alternate Source

(602) 957-0999

Ask for Don or Mark

A DataMation Services Co.
2001 East Campbell Ave.
Phoenix, Arizona 85016

DATA COMMUNICATIONS SPECIALISTS

You can step into a wide open opportunity with the most dynamic company on the data communications scene today.

PCI designs and manufactures a line of SNA SDLC to ASCII protocol converters. We were the first in the protocol conversion game and we're ahead of the pack with products that are the best on the market—and, for certain applications, we manufacture the only product.

We are looking for data communications specialists managers directors with intimate knowledge of IBM's System Network Architecture—who want to break out of the mold.

We are expanding rapidly and need people to open new regional offices in Chicago, San Francisco, Hartford, Dallas, and Washington, D.C. These are ground-floor management positions.

This is a unique opportunity to use your data communications skills to excel professionally and economically. This kind of opportunity is rare at any time—but especially today.

If you've got the detailed knowledge of SNA that we require plus a desire to step into a dynamite marketing challenge: send your resume to:

Addison Woods
Manager, National Accounts
PROTOCOL COMPUTERS, INC.
6430 Variel Avenue, Suite 107
Woodland Hills, CA 91367

PCI
PROTOCOL COMPUTERS, INC.

The Personal Mainframe.

When you use a DECsystem-10 or DECSYSTEM-20, you're using a sytem so versatile and easy to manage that we call it The Personal Mainframe™ computer.

Unlike other large-scale computers, The Personal Mainframe is designed to be interactive. So up to 512 users can run different applications, each with access to the full power of the system.

Engineers can do computer modelling. Scientists can analyze research data. Personnel can run batch payroll jobs. Accountants can do large-scale financial work. And all the while, programmers can work at high-speed video terminals, developing new applications in full-featured mainframe COBOL, FORTRAN, APL, BASIC, or ALGOL. And working with tools like our CODASYL DBMS.

It's this versatility that has made The Personal Mainframe computer so popular for everything from manufacturing, engineering and laboratory work, to government, business and education.

And The Personal Mainframe is very easy to manage.

The DECsystem-10, for example, can provide automatic availability and network status reports every few minutes.

And the DECSYSTEM-20 features our new Bias Control, which balances the CPU dynamically—according to your administrative plan—for interactive, compute-bound and batch operations.

Whichever Personal Mainframe you choose, you get Digital's advanced communications. And the ability to network with other computers from Digital, plus computers from other vendors.

If you're spending a lot on large computers, but not getting enough in return, send for our brochure, "The Personal Mainframe and how to know if you need it." Or call us at 617-467-6434.

And discover just how much a large-scale computer can do.

Digital Equipment Corporation, 201 Forest St., Marlboro, MA 01752. European Headquarters: 12 Av. des Morgines, CH-1213 Petit-Lancy/Geneva. In Canada: Digital Equipment of Canada, Ltd.

digital

We change the way people work.

IF YOU WANT TO DO OEM COMPUTER BUSINESS IN EUROPE...

YOU'D BETTER GO TO GERMANY...ITALY...FRANCE...ENGLAND AND SCANDINAVIA!

Europe is a true regional marketplace... not one, but many. And, seasoned sales people know that you can't expect your customers to come to you...you must make it easy for them to know you, understand your product and buy.

The invitational Computer Conferences are designed to bring the OEM manufacturers face-to-face with the European OEM decision makers *where they live and work.* Patterned after the successful, regional Invitational Computer Conferences in the U.S., these one day exhibits of operating equipment and technical product seminars are the most efficient way to cover the EEC marketplace. At low, low cost... shouldn't you be there too?

Amsterdam—Oct. 7, 1982
Milan—Oct. 13, 1982
Munich—Oct. 18, 1982
London—Mar. 1983
Frankfurt—Mar. 1983
Paris—Mar. 1983

For further information or guest invitation contact:

B.J. Johnson & Assoc., Inc.
3151 Airway Ave., #C-2
Costa Mesa, CA 92626
Tel: (714) 957-0171
Telex: 678406 TAB IRIS

U.K. office: Tom Lewis Text 100 Ltd.
10 Barley Mow Passage
Chiswick,
London, W4 4PH.
Tel: 01 994 6477
Telex: 8811418
Ref: T100N SPACES G

INVITATIONAL COMPUTER CONFERENCES

The Total Approach to Oil and Gas Accounting for your... IBM Mainframe

We at Petroleum Software Systems, Inc. asked some of our customers why they chose our oil and gas accounting system.

One of our customers said: "Petroleum Software Systems worked with us to define our needs first, and then worked to help us meet those specific needs. Their system is excellent from both the data processing and the management points of view.

"The system's most outstanding feature is the concept itself: a single, integrated data base."

TM

Petroleum Software Systems, Inc.
8265 S. Walker / Oklahoma City, OK 73139
(405) 636-1587

Texas Looking to High Tech To Buoy Faltering Economy

(Continued from Page 55)

centers of high technology. These include availability of raw materials and technically qualified personnel, good transportation facilities, proximity to primary markets and an acceptable quality of life.

However, while presenting a package that will appeal to budding computer manufacturers obviously calls for some coordination, as yet there exists no concerted state strategy to manage high-technology growth in the '80s. This was recently acknowledged by a report entitled "Texas 2000 Commission Report and Recommendations" produced by the office of Gov. William P. Clements Jr. "Because the state can expect to face a constant stream of challenges to human resource and economic development, statewide long-range planning has become a necessity," the report noted.

During the last 20 years Texas experienced a period of economic growth that greatly expanded the range and capacity of its industries, dramatically increased its per capita personal income and brought the state to a position of national economic prominence.

If this success story is to continue, the state must create a carefully channeled major research and development program. The Texas 2000 report said: "An increased and strategically focused R&D effort is fundamental to Texas' future. This requires close cooperation among scientists, engineers and private entrepreneurs as well as management by people who understand the crucial role of R&D.

Regional Report

"Development of strong R&D partnerships among Texas government, universities, foundations and the private sector will foster this expansion and sharpening of focus," the report added.

In terms of an industrial presence, Texas already possesses some of the nation's major computer related vendors including IBM, Honeywell, Inc., Harris Corp., Xerox Corp., Texas Instruments, Inc., Intel Corp. and Datapoint Corp. The state also contains some of the most sophisticated computer users in the country, particularly in the finance and energy-related industries.

This concentration of high-technology expertise, added to the low cost of living in Houston and Dallas, the state's two major metropolitan areas, has attracted computer scientists and engineers from all points in the country to the state. The degree to which Texas can demonstrate the flexibility and the organization to channel future growth into high technology will determine whether they stay.

Texas Boom Days Over?

(Continued from Page 55)

annual rate of 2.7% between 1970 and 1980, compared with the national rate of 1.0%.

Recent indicators, however, suggest the boom days are over for DPers in the Southwest, at least temporarily. With the bottom falling out of the energy industry, cities such as Houston have seen a major reversal of recruitment practices this year.

Daryl Raithel, computer specialist for International Personnel Services (IPS), a recruitment agency based here commented: "The computer industry. has changed radically over the past year. Companies, both user and vendor, are no longer willing to pay relocation expenses and sometimes even agency fees.

"As a result the volume of DP business has dropped dramatically, we are doing far more local searches than we used to and clients are demanding specialists for a specific industry or application," Raithel said. "In addition, employers want people who are experienced, cost less than last year and do not need to be relocated," he added.

Raithel claimed that at least 350 recruitment agencies had gone out of business in the state this year.

Sharp Drop

The recession has brought about a sharp drop in the amount of turnover that companies are experiencing among their DP personnel.

Texaco, for example, reports that turnover among its programmers this year to be 8.6% compared with rates of over 20% in the late 1970s. Harris Corp. reports that turnover this year has dropped from 18% in 1981 to 8%.

Many companies have now decided to cut costs and hire new employees without the use of outside recruiters. First City Bancorporation of Texas, one of the largest banks in the state has sent a letter to all its recruitment agencies telling them it is no longer using their services.

"Our turnover is half of what it was last year and so our need for people is nowhere near as great," explained Barbara Marcus, assistant vice-president of professional recruiting at First City.

Mergers & Acquisitions

Xerox Corp. has acquired the assets of **Computerset Software, Inc.** of San Diego, Calif. Terms of the agreement were not disclosed.

United Telecom Computer Group has acquired **International Data Base Systems, Inc.**, a Philadelphia-based software firm.

Lomas & Nettleton Financial Corp. has acquired **Symbolics, Inc.** of Richardson, Texas for $2.1 million.

IMS Systems Corp. has completed the acquisition of **Brandon Consulting Group, Inc.**, a technical management consulting firm.

To Sustain DP Industry Growth

Texas Looking to Beef Up High-Tech Education

By Robert Batt
CW West Coast Bureau

AUSTIN, Texas — If Texas is to sustain its reputation as a growing center of computer technology and expertise, a critical factor will be the degree to which it can attract an ample supply of highly qualified people.

A common ingredient of those areas that attract high technology is a good infrastructure of higher education.

For example, California's Silicon Valley has Stanford University to draw on, while the Boston area has at its disposal the resources of MIT. Over the last decade Texas has made a strong bid to establish itself as a center of academic excellence that is capable not only of producing newly graduated computer scientists, but also of providing opportunities for established DPers to continue their education.

Computer vendors in the state have been anxious to spur the growth of institutions catering to the needs of the DP industry. For example, an engineering school has just been established at the University of Texas in San Antonio. The school is being sponsored by industry, the state and the city of San Antonio in what many observers see as a growing trend of community cooperation.

"College graduates are important to the future leadership of our company and so our senior vice-presidents personally go to the colleges and recruit students," said Neal Dempsey, vice-president of marketing at Harris Corp. in Dallas.

IBM Contracts

At the University of Texas in Austin, the computer science department is working on several research contracts with IBM on modeling studies of local networks and with Intel Corp. on the interaction of that company's data base processor and host machine environments.

Several companies donate equipment to local universities to expose students to their equipment, thereby reducing the amount of training required if the student eventually joins that company. For example, Texas Instruments, Inc. has donated a couple of its 990 microcomputer models to the University of Texas.

According to Al Dale, chairman of the computer science department at the University of Texas, the cutbacks in the federal education budget have finally convinced computer vendors to fund the future supply of well-trained DPers.

Industry support, Dale said, is now more long-term and significant, with funding being received by the universities from the computer industry.

But the battle is by no means over. Dale asserted that there is still a crisis in graduate student fellowships, and industry needs to cooperate with universities to attract graduates into research rather than have them siphoned off to industry by the lure of cash.

"Industry is going to have to up the ante in terms of direct equipment support and support of faculty fellowships," Dale added.

While Texas universities have been traditionally strong in some areas of DP-related research — for example, program verification, modeling and performance evaluation — they have been hurt in other areas by the lack of experimental research equipment, according to Dale.

Currently the thrust of research at the University of Texas is on producing efficient software. Dale's department has just received a $3.7 million grant from the National Science Foundation as part of a nationwide program to stimulate reseach in computer science departments across the country.

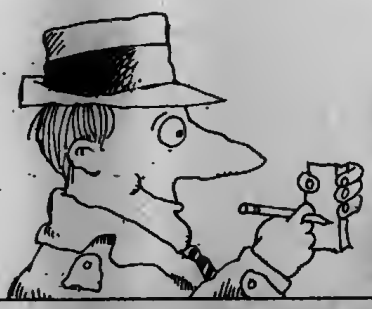
Regional Report

Orders & Installations

Honeywell, Inc. has received orders for its DPS 7/45 medium-scale computer from White & White, Inc. of Grand Rapids, Mich., a distributor of hospital supplies, and from Klein Tools, Inc., Skokie, Ill. The State of Arizona has ordered a DPS 6/48 minicomputer for the state's Registrar of Contracts.

Codex Corp. has signed a $1 million contract with General Electric Co.for the complete Codex line, including LSI 48 FP Fast Poll modems and MX 2400 modems. General Electric, which has 13 regional computer centers, will use the equipment in its networks across the country.

Programming Technology Corp. has been awarded a contract for communications systems analysis by First Nationwide Savings of San Francisco.



COVERING THE DATABASES

Computerworld's October 25th Special Report Gives You All You Need to Make the Right DBMS Choices.

According to International Data Corporation, the world's largest independent computer industry research firm, the Data Management marketplace, which was three million dollars in 1981, will grow to one billion five hundred twenty million by 1986.

The data base management systems segment of that marketplace is not only the largest segment — it's the fastest-growing. This rapid growth is due to the increasing interest in decision support systems and the integration of application software with DBMS.

When *Computerworld* covers this high-growth industry sector in its October 25th Special Report on DBMS, you'll get tutorials by industry specialists on DBMS topics. And you'll get application stories that will outline how and why companies selected DBMS, what products they considered and finally chose, and details on how the software worked after it was installed. And you'll get articles on:

- Trends in user interfaces to DBMS
- The evolution of data base technology (emphasizing current trends)
- DBMS in the Micro World: Are workable products available?
- How to select the right DBMS for your needs
- DBMS Models: An Explanation
- Managing the DBMS: Special problems and concerns
- The role of the data base administrator
- Trends in data base machines: Why should these be selected over DBMS packages?

If you are considering DBMS systems, this is the Special Report you won't want to miss.

And if you sell utility software packages; data management systems or data base management systems, here's where you'll find your customers next October 25th — reading *Computerworld's* Special Report on Data Base Management Systems. Your ad in this issue will assure them more complete information on the products in the field. Ad close for this Special Report is October 8th.

Call your local sales representative at one of the offices listed below, or call Don Fagan, Vice President, Sales at (617) 879-0700.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

BOSTON / Chris Lee, Ed Marecki, Joe Fitzhugh, Kathy Doyle, Diane Sukey, (617) 879-0700,
CHICAGO / Art Kossack, Newt Barrett, Jan Raska, Chris Lee, (312) 827-4433
NEW YORK / Mike Masters, Peter Senft, Doug Cheney, Ray Corbin, Fred LaSapio, (201) 967-1350
SAN FRANCISCO / Bill Healey, Barry Millone, Ruth Gordon, Rick Jamison, Eileen Dunn, (415) 421-7330
LOS ANGELES / Jim Richardson, Bob Hubbard, Beverly Raus, Delbra Pendergrass, (714) 558-6480

Trying To Make Your Dinosaur Work Miracles?

See Us At Software/Expo Booth 209

Forget about leaping tall buildings in a single bound. With obsolete financial software, just satisfying routine business needs is a feat in itself.

A clever disguise won't help provide timely information for critical management decisions. Or meet new requirements quickly and inexpensively. Not even a miracle can transform mild-mannered, batch software into a results-oriented, real time system.

That's why you need a fresh start.

Walker's Integrated, Interactive Financial Systems (II/FS) give you real time information for real time decisions. Real time means more accurate data, quicker closings, and better control. Variances from plan are available at decision time, rather than a month after. Real time systems finally make financial data a driving force in management decision making.

II/FS combines real time processing with real time personalization. From a terminal, you can tailor application processing to your unique requirements, giving your large scale system the flexibility, friendliness, and responsiveness of personal computing.

And forget about duplicated effort. Enter data one time, in one system, and it's balanced in *all* systems. Because II/FS is a fully integrated family, featuring:

- Accounts Payable
- Accounts Receivable and Credit
- Purchase Order
- Material Management
- General Ledger

II/FS means long term strategic solutions. Our unique "Software Bridge" isolates applications from the technology environment. The Bridge facilitates sophisticated TP and DBMS usage with today's latest technology. It's your insurance for easy migration to future technology.

Check These Differences

II/FS FOR TODAY'S RESULTS	THE DINOSAUR APPROACH
• INTERACTIVE PROCESSING immediately screens data for accuracy at the source and ensures timeliness.	• BATCH solves today's problems tomorrow.
• REAL TIME TRANSACTIONS work the way your business works—a natural complement.	• ONLINE DATA ENTRY turns accountants into keypunchers.
• INTEGRATED SYSTEMS provide balanced data with single entries.	• SEPARATE SYSTEMS duplicate work and increase out-of-balance risks.
• REAL TIME QUERY displays up-to-the-second information.	• ONLINE QUERY highlights yesterday's reports on a CRT.
• PERSONALIZED SYSTEMS address your ongoing needs, precisely, quickly, and inexpensively.	• STANDARD, INFLEXIBLE SYSTEMS require continual, costly reprogramming.

WALKER

WALKER INTERACTIVE PRODUCTS, 100 MISSION ST., SAN FRANCISCO, CA 94105 (415) 495-8811

FINANCIAL SOFTWARE SEMINARS

Don't waste time reviewing outdated and rigid systems. Only WALKER offers a full line of interactive financial solutions for mainframes.

Atlanta, GA · Oct. 6
Boston, MA · Oct. 7
Calgary, AL · Sept. 7
Charlotte, NC · Oct. 5
Chicago, IL
Downtown · Oct. 13
Airport · Sept. 14
Cincinnati, OH Oct. 19
Cleveland, OH Sept. 14
Costa Mesa, CA · Oct. 21
Dallas, TX · Sept. 15
Denver, CO · Oct. 14
Detroit, MI Oct. 5
Houston, TX · Oct. 20
Kansas City, MO · Oct. 21
Los Angeles, CA · Sept. 16
Miami, FL Oct. 19
Minneapolis, MN Oct. 20
Montreal, QUE · Sept. 6
New York, NY Sept. 16
Philadelphia, PA Sept. 15
San Francisco, CA · Oct. 15
San Jose, CA · Sept. 9
Seattle, WA Sept. 8
Secaucus, NJ · Oct. 6
St. Louis, MO · Sept. 9
Toronto, ONT Oct. 12
Washington, D.C. · Oct. 7

Please Send ☐ More Information ☐ Seminar Registration CW 6

Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____

WALKER INTERACTIVE PRODUCTS,
100 MISSION ST., SAN FRANCISCO, CA 94105 (415) 495-8811

Contracts & Pacts

The Scientific Services and Systems Group of Wyle Laboratories has been awarded a contract by the National Aeronautics and Space Administration (NASA)-Langly Research Center for the design, modification and maintenance of hardware and computer programs for digital data systems and special-purpose computer systems used in NASA's research facilities. The contract is valued in excess of $35 million.

Control Data Corp. will supply Model 9409T 5¼-in. flexible disk drives to Ontel Corp. under a two-year $4 million contract.

Micropolis Corp. has signed a contract to provide Model 1203 8-in. Winchester disk drives to Three Rivers Computer Corp. The two-year contract is valued at more than $2 million.

Barrington International Corp. has signed a $1 million contract with Irwin Olivetti, Inc. for the purchase of Olivetti's 5¼-in. Winchester disk drives.

Century Data Systems, Inc. has signed two renewal contracts totaling over $500,000 for its Trident line of removable-pack disk drives. Profit Control Systems of Pine Brook, N.J., will purchase 50 units from the firm while Lisp Machines, Inc. of Cambridge, Mass., has ordered 25 units.

Dynabyte, Inc., manufacturer of 8- and 16-bit hard disk microcomputers, and Trac Line, publishers of application software, have begun joint marketing efforts. The program includes cross-product endorsement, joint technical and sales training, user implementation seminars and trade show demonstrations.

Insurance Information, Inc. has signed a three-year contract with Honeywell, Inc. for the purchase and resale of 300 Honeywell DPS 6 minicomputers. The firm will market the systems with its own communications and software applications packages to insurance companies for installation in selected independent-agent offices. The contract has a potential value of $14 million.

Abie Computer, Inc. has received an $850,000 contract from Autophon, Solothurn, Switzerland, for communications multiplexers.

Xebec Systems, Inc. will supply S1410 5¼-in. Winchester disk controllers to Eagle Computer, Inc. and Tecmar, Inc. under contracts totaling $7.6 million.

Rexon Business Machines Corp. has signed a contract with Hazeltine Corp. for the purchase of several thousand customized Hazeltine Executive computer terminals over the next two years. Value of the contract was not disclosed.

POSITION ANNOUNCEMENTS

STATE-OF-THE-ART JOB OPPORTUNITIES

SR. DATABASE SPECIALIST ..... to $30K
TOTAL, RAMIS, Database and model development in highly stable environment.

DATA CENTER MANAGER ..... to $34K
HP-3000. Excellent upward mobility potential.

SR. PROGRAMMER/ ANALYST ..... to $35K
DOS, VSE, CICS, 4341 on order. Rapidly growing company.

SYSTEMS PROGRAMMER..... to $40K
MVS, CICS. Function as team leader. Strong background in capacity planning and systems architecture.

SYSTEMS ANALYST... to $35K
Act as inhouse consultant for conversion to IBM system. CICS exposure preferred. Excellent opportunity to help design system from ground up.

PROJECT LEADER... to $35K
4341, OS/MVS. Supervision of maintenance and major enhancements with eventual design responsibilities.

PROGRAMMER/ ANALYST ..... to $32K
TANDEM applications (COBOL) for EFTS system. High visibility position.

Employer retained agency, call or send resume to:

COMPU SEARCH
50 CALIFORNIA STREET
SUITE 3550-A
SAN FRANCISCO, CA 94111
(415) 362-0911

NEW HAMPSHIRE $25 - $60K

Applications and Systems Software
Micro/Mini/Mainframe

Management Advisory Services Inc
Colonial Office Park
48 Constitution Drive
Bedford, NH 03102
(603) 472-8844
Fees and relocation expenses company paid.

MAINE

We have specialized in data processing professional placement in Maine for almost a fifth of a century. If you qualify for positions in the $25-35,000 range, please contact us in total confidence. Our clients pay our fees and provide relocation assistance.

Mr. ROMAC.
477 Congress St.
Portland, Maine 04101
(207) 773-4740

Let 400 people help you find a better job.

Many people will tell you that finding a job in data processing is easy. That's true.

But finding one that meets *all* of your standards–the right money, the best future–is much more difficult.

Unless you get a professional, specialized recruiter like Robert Half to do it for you.

Think of it this way.

There's one of you.

And 400 of us.

Who's going to get you the best job first?

We've been data processing specialists for 34 years. We've stayed on top of all the changes by helping thousands of data processing managers, analysts and programmers find better jobs.

Because we know where the jobs are.

The ones that challenge your skills. And reward you accordingly.

Our 80 offices in the United States, Canada and Great Britain are linked by a unique system to help you get the best position you want–whether it's around the world or around the corner.

What's more, this service costs you absolutely nothing.

So if you're thinking of a change, look us up in the white pages today.

To get 400 people working on your behalf, you only have to talk to one.

ROBERT HALF
city specialists.

*1982 Robert Half International Inc. All Offices Independently Owned and Operated

Consultants, Analysts and Programmers

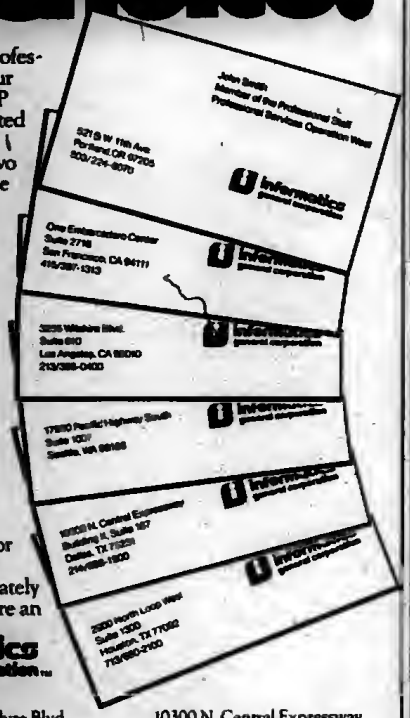
Your Choice.

You can join Informatics' Professional Staff at the location of your choice. We have openings for DP Professionals with growth-oriented technical and consulting skills. Requirements include at least two years of experience on large-scale IBM systems using COBOL or PL/1. It's a plus if you also have experience in IMS, MARK IV® or CICS.

Informatics has completed twenty successful years of providing professional services for systems development and consulting projects. Present activity includes development assignments on major state-of-the-art systems for a variety of application areas. The most advanced development techniques are emphasized for all assignments.

If you are interested in a professional career, pick a card for the location of your choice. Call collect or send a resume immediately to the office of your choice. We are an equal opportunity employer.

informatics general corporation



521 S.W. 11th Ave.
Portland, OR 97205
503/224-6070

3255 Wilshire Blvd.
Suite 610
Los Angeles, CA 90010
213/386-0400

10300 N. Central Expressway
Building II, Suite 167
Dallas, TX 75231
214/696-1900

One Embarcadero Center
Suite 2716
San Francisco, CA 94111
415/397-1313

17930 Pacific Highway South
Suite 1007
Seattle, WA 98188

2900 North Loop West
Suite 1300
Houston, TX 77092
713/680-2100

FIRST CLASS OPPORTUNITIES IN A FIRST CLASS ENVIRONMENT

AND A $2000 BONUS!

FINANCIAL INSTITUTION SERVICES, offers data processing professionals the ideal combination...challenging career positions in a highly sophisticated best-of-the-art environment. We are recognized as a world-wide leader in the financial transaction processing industry and a growing division of AMERICAN EXPRESS COMPANY. Our current openings are for:

ON-LINE PROGRAMMERS: With minimum 2 years experience using BAL in a CICS (macro-level) OS environment. Will implement/maintain on-line operations, software relating to general finance reporting. Exposure to large IBM compatible CPU's and peripherals a plus.

APPLICATION PROGRAMMERS & PROGRAMMER ANALYSTS: Minimum 2 years experience with a thorough knowledge of COBOL required. Exposure to BAL and OS preferred but not essential.

MVS SYSTEMS PROGRAMMER: Generation and maintenance of MVS operating system, JES II and the installation of a variety of products in a multiple CPU environment. Experience should include SMF4, monitoring and tuning. Familiarity with maintenance and operation of CICS, TSO/SPF, ACF/VTAM and ACF/NCP.

TECHNICAL SUPPORT MANAGER: Minimum 4 years experience in similar position, supervise staff of 10, interface with users on implementation of new systems. Knowledge of OS JCL, VSAM, BDAM and strong analytical skills essential, in a programming or operations setting. Good communication skills and ability to coordinate.

FINANCIAL INSTITUTION SERVICES provides a highly competitive salary and one of the industry's best benefits packages. For consideration, qualified applicants should forward resume or call TOLL FREE, 800-228-9075...ask for JOHN MACKEY, Manager of Professional Employment.

FINANCIAL INSTITUTION SERVICES
7301 Pacific Street
Omaha, NE 68114

No Bonus To Agency Referred Applicants

An Equal Opportunity Employer M/F

Software Engineers

Why would some of the best SOFTWARE ENGINEERS want to switch to TIMEX Computer Corporation?

Quite simply, for the opportunity to create the most successful personal computer on the market. Already a major force in precision products, TIMEX is gearing up to make sophisticated computers for home, business and educational use. And we're attracting some very particular professionals – with career aims as ambitious as our sales goals.

Working with these men and women, you'll be involved in some of the most exciting developments in computing today. Such as our TIMEX Sinclair 1000: the first in a line of computers capable of highly complex analysis, graphic and animation. Your responsibilities may include software product development; quality assurance; specification writing; or submissions review.

To qualify, you should be a degreed engineer with an electronic consumer manufacturing background encompassing either software microprocessor experience (Z80A preferred) or personal computer applications experience (preferably consumer). Microprocessor hardware background would be a plus.

If you're intrigued by the possibilities our operation holds for you, let us tell you more – about our excellent salaries, benefits, and far-reaching career prospects. Send your resume and earnings history in confidence to: Ms. Donna Scheib, TIMEX Computer Corporation, P.O. Box 1700, Middlebury, CT 06720.

TIMEX

An equal opportunity employer m/f

Data Processing

PROGRAMMER ANALYSTS

Our People Are Some of the Brightest, Most Capable, Most Ambitious in the Industry.
And We Are Constantly Looking For More Like Them.
-Peter Lewis
Chairman, Progressive Corp.

Does your current employer have this appreciation and respect for talented people? At Progressive, our exceptional growth and continued success requires additional high-caliber professionals to uphold our industry leadership. In return, we provide a stimulating and challenging career environment where rewards are directly tied to your current and projected skills.

You may be the key to our future sucoess. Ideally, your background will include:

- systems and programming experience and a readiness for new challenges/rewards.
- successful track record in Data Processing. . .experience, education and dynamic energy showing potential for advancement.
- one of the best in your field, you seek a career-minded organization where your skills are recognized.

If you meet our high standards, you will find both personal and professional growth opportunity commensurate with your skill and desire. Send resume to: **Manager, Human Resources.**

progressive corporation

PROGRAMMER/ ANALYST

Experience Required

RAVEN INDUSTRIES is actively recruiting for an experienced programmer. This position requires at least 2 years of programming experience. A strong proficiency in DIBOL or other business oriented language is required. A familiarity with DEC equipment is a definite plus.

If you are looking for a challenge as a Programmer/Analyst and want to work on an exciting new project, this is for you. We can offer a salary commensurate with your experience and an excellent benefit package. Call 605-336-0300 or send resume in confidence to:

Dwight Plucker
RAVEN INDUSTRIES, INC.
P.O. Box 1007
Sioux Falls, SD 57117

Equal Opportunity Employer

MOVE · STAY
SOUTH NOW

Our computer can help you get here or stay here. Four WATS lines, 13 years' experience, 270 affiliated offices, 300+ current job orders, 3000+ company clients from Virginia to Texas to Florida! Send resume to:

DATA RESOURCES, USA
Division of Landrum Personnel Resources
P.O. Box 1373C
Pensacola, Florida 32596-1373
CALL TOLL FREE (800) 874-9497
IN FLORIDA (904) 434-2321 COLLECT

Projects Manager Systems Analyst

This Academic Medical Center (Bowman Gray School of Medicine of Wake Forest University and North Carolina Baptist Hospital, Inc.) is expanding their data processing services. Candidates must have a minimum of 7 years experience including the demonstrated ability to conduct feasibility studies, perform systems analysis and design for new projects as well as for enhancements and maintenance, develop realistic and measurable project plans, write programmer specifications, monitor performance of team members, provide technical guidance, and meet project objectives. Proficiency in COBOL with data base and on-line experience required. Experience with business financial systems highly desirable. Degree in Computer Science or Math preferred. The center offers competitive salaries and benefits. Send confidential resume with salary history to: **Bob Petersen, Manager of Systems Development, Medical Center Computer Center, 300 South Hawthorne Rd., Winston Salem, NC 27103.**

How Do Computer Salaries Stack Up in Different Cities Across North America?

Our New, Free Survey Will Show You.

Have you ever wondered how your salary compares with your peers in your own local area? Or whether computer professionals are making substantially more or less money elsewhere?

This handy, fold-out Survey breaks out salary information by market and by position category. 2,160 separate figures are reported, which makes this Survey the most extensive one ever undertaken by Source Edp.

Our new report, the most complete Local Survey we've ever published, can show you exactly what others are earning in most major cities throughout the United States and in Canada.

We Surveyed 48 Specific Position Categories in 45 Markets.

In addition to reviewing *national* medians, the Local Survey breaks out salary data by market. Forty-eight specific positions are reviewed in each city. Included are position categories in programming, software, systems design, data communications, mini/micro systems, data base, EDP auditing, computer marketing, management and others—at various levels of experience and at different size computer system sites.

That means, for example, a Minicomputer Programmer with two-to-four years of experience will be able to determine what his/her peers make in cities ranging from Albuquerque to Vancouver or Akron to San Diego.

It's a Most Valuable Tool for Mapping Out Sound Career Plans.

The new, *Local Metropolitan Computer Salary Survey* is compiled and published by Source Edp, the Nation's oldest and largest recruiting firm devoted exclusively to the computer profession. If you're wondering whether your salary is keeping pace—or where your career might head in the future—our report is must reading. Especially in today's competitive environment where smart planning is key to long-term success.

For example, if you're a Data Communications Programmer with over four years of experience, here's how your salary stacks up in just five of forty-five markets surveyed.

Call for Your Free Copy Today.

The Survey is available to computer professionals without charge. Call the Source Edp office nearest you and request a copy. As you'll discover, the Survey can be an extremely valuable asset in helping you make important career decisions.

source edp

Offices nationwide
Client organizations assume our charges

Call Today for Your FREE Copy.

Simply phone the Source Edp office nearest you.
If unable to call, write:
Source Edp, Dept. CL-5
Two Northfield Plaza
Suite 227
Northfield, Illinois 60093

United States

Arizona	
Phoenix	602/279-1010
California	
Northern	
Mountain View	415/[illegible]-4010
San Francisco	415/434-2410
Walnut Creek	415/945-1910
Southern	
Century City	213/203-8111
Fullerton	714/871-6600
Irvine	714/833-1730
Los Angeles	213/688-0041
San Diego	714/231-1900
Torrance	213/540-7500
Van Nuys	213/781-4800
Colorado	
Denver	303/571-4460
Englewood	303/773-3700
Connecticut	
Hartford	203/522-4500
Stratford	203/375-7240
District of Columbia	
Washington DC	202/466-5880
Florida	
Miami	305/624-3538
Georgia	
Atlanta	
Downtown	404/588-8350
North	404/953-0200
Northeast	404/325-8370
Illinois	
Chicago	312/782-0857
Northfield	312/441-5200
Oak Brook	312/986-0422
Rolling Meadows	312/382-0244
Schaumburg	[illegible]
Indianapolis	317/631-2300
Kansas	
Overland Park	913/[illegible]
Kentucky	
Louisville	502/581-9600
Louisiana	
New Orleans	504/561-8000
Maryland	
Baltimore	301/727-4060
Rockville	301/258-8800
Towson	301/321-7044
Massachusetts	
Boston	617/482-7813
Burlington	617/273-5160
Wellesley	617/237-3120
Michigan	
Detroit	313/258-7607
Southfield	313/352-6520
Troy	313/362-0070
Minnesota	
Minneapolis	
Downtown	612/332-6400
West	612/544-3800
St. Paul	612/227-6100
Missouri	
Clayton	314/862-3800
Kansas City	816/474-3393
St. Louis	314/231-4080
New Hampshire	
Nashua	603/880-4047
New Jersey	
Cherry Hill	609/482-2600
Edison	201/494-2900
Morristown	201/267-3222
Paramus	201/845-3800
Princeton	609/452-7277
New York	
New York City	
Grand Cent. Sta.	212/557-8811
Penn Station	212/736-7446
Wall Street	212/962-8000
Rochester	716/263-2870
Syosset, L.I.	516/364-8900
White Plains	914/683-8300
Ohio	
Akron	216/535-1160
Cincinnati	513/769-5080
Cleveland	216/771-2070
Columbus	614/224-8880
Dayton	513/461-4080
Oklahoma	
Tulsa	918/585-7700
Oregon	
Portland	503/223-6180
Pennsylvania	
King of Prussia	215/265-7200
Philadelphia	215/665-1717
Pittsburgh	412/261-8540
Wilkins Township	412/247-4400
Texas	
Dallas	
Central	214/748-1800
North	214/387-1600
Fort Worth	817/336-8300
Houston	
Downtown	713/751-0100
N. Loop W.	713/957-8655
S.W. Fwy.	713/626-6705
San Antonio	512/342-8800
Virginia	
McLean	703/790-3010
Washington	
Bellevue	206/454-8400
Wisconsin	
Milwaukee	414/277-8545
Canada	
Ontario	
Don Mills	416/445-5735
Mississauga	416/272-3333
Toronto	416/866-1125
Quebec	
Montreal	514/[illegible]-7053

position announcements | position announcements | position announcements | position announcements | position announcements

SPSS inc.

SEE US AT BOOTH #256 AT SOFTWARE EXPO.

An Environment For Creative Excellence

Two programmers began with a concept and built that concept into a multi-million dollar business. With the evolution of the business, came a style of management and a management philosophy that is unique.

Imagine an atmosphere where extremely creative people are part of a team that designs and enhances products as well as participates in determining the future direction of the company. A philosophy where highly skilled individuals can continue to grow both monetarily and technically.

At SPSS, we are developing user-oriented programs for statistics, data analysis, report writing, tabular and graphic display and data base management. Our software is highly machine-independent and we are developing state-of-the-art applications.

We are looking for people to develop software systems for mainframe, mini & micro computers.

Senior Software Engineer

5 or more years experience in designing and programming large scale software, preferably in FORTRAN, C or Assembler, in any of the following areas: statistics, data analysis, report writing, tabular and graphic display and data base management. We pay outstanding salaries for top professionals.

Programmers

Seeking at least 3 years experience programming software in FORTRAN, C or Assembler, preferably in scientific or statistical applications.

If you are seeking a stimulating, progressive work environment where the management style provides a long-term career opportunity, send us your resume. We'll be happy to discuss our company, its benefits (including 4 weeks vacation after 1 year) and our current projects. Send your resume or stop by our Booth (#256) at Software Expo.

V.P. Technical Development

SPSS, Inc.
Suite 3300, 444 N. Michigan Ave.
Chicago, IL 60611

equal opportunity employer m/f

SYSTEM PROGRAMMERS

- UNIX operating system
- Microcomputers
- In-Circuit Emulators
- Compilers

Kontron, FutureData has immediate opportunities for System Programmers and Senior System Programmers to develop system software for our microcomputer development system, slave emulation device and to develop high level language compilers.

The ideal individuals should have 3 - 10 years successful project experience developing system software on micro-mini computers, have fluency in assembly language and experience with PASCAL or "C" on UNIX or CP/M, BSCS or equivalent is required. For compiler development, directly related experience is required.

We have a modern and pleasant work environment at our Irvine, California facility. We are looking for the best; our salaries and benefits are consistant with this search for the best.

For immediate consideration send your resume to department CW9,

Peter A. Espiritu
(213) 641-7200

FUTURE DATA DIVISION KONTRON ELECTRONICS

5730 Buckingham Parkway, Culver City, CA. 90230

Equal opportunity employer M/F

"THE LEADING EDGE"

APPLICATIONS	SYSTEMS
Programmers	Systems Programmer(s)
Programmer/Analysts	Sr. Systems Programmer(s)
Systems Analyst	Lead Systems Programmer(s)
Project Leader	Tech. Support Manager(s)
Project Manager	

3033/31 4341/31 S370

Banking, Manufacturing and Insurance Applications

MVS OS/VS DOS/VSE DOS/VS VM
CICS/VS(COMMAND & MACRO) IMS/VS, ANS COBOL, ACF/NCP, NCCF, NPDA, ACF/VTAM VSAM, VTAM, SYSGENS, ALC

You've got the skills - I have the Sunbelt openings you're looking for!! My 20+ years of DP Recruiting has allowed me to establish a firm rapport with "Fortune 500" clients that seek professionals with your skills. I deal directly with these companies, and YOU deal directly with me. (Not other recruiters or branch offices). Listed below is a partial list of locations. (Yes I have made placements in all of them)

JACKSONVILLE	ATLANTA
DALLAS	ORLANDO
TAMPA BAY	HOUSTON
DENVER	PHOENIX
NEW ORLEANS	WINSTON-SALEM
RICHMOND	MIAMI

INTERESTED!!!! Send me a resume or call for an appointment (904) 398-7371 (I'm on the phone a lot - leave a number if I'm busy - I'll get back to you!) Our clients assume all fees including interviewing and relocation costs.

CONTACT BILL DENNY, V.P.
JIM KING & ASSOCIATES

1540 Gulf Life Tower 398-7371

CONTRACT SR. PROGRAMMER/ANALYSTS UP TO $25/HOUR

Positions are immediately available in many locations in Florida, Michigan, Ohio, Virginia and Georgia.

To qualify for one of these positions, you must have a minimum of 5 years experience as a:

SR. PROGRAMMER/ANALYST-IMS, DB/DC, ADF, PL/1
SR. PROGRAMMER/ANALYST-DB/DC, COBOL
SR. PROGRAMMER/ANALYST-CICS, COBOL
SR. PROGRAMMER/ANALYST-IDMS, DB, COBOL
SR. PROGRAMMER/ANALYST-IDMS, DB/DC, COBOL
SR. PROGRAMMER/ANALYST-ADA-BASE, HP 3000
SR. PROGRAMMER/ANALYST-Burrough 3800

Applicants ready to begin NOW, please forward your resume and call George Johnson COLLECT between 10AM-4PM (CDT) for an interview appointment in your city.

JPS, Inc.

1900 West Loop South #970 • Houston, Texas 77027
1-800-231-2555 • (713) 961-4662 in Texas

NO AGENCIES PLEASE
POSITIONS AVAILABLE EVERY DAY, EVERYWHERE IN THE USA

An equal opportunity employer m/f

COMPUTER SCIENCE
Millersville State College (PA)

Millersville State College is soliciting applicants for a tenure-track position in Computer Science for the year beginning January 1983. A Ph.D. is preferred, but an M.S./M.A. in Computer Science acceptable. Teaching experience is preferred with additional business computing experience desirable. More than 15% of the college's 4500 students major in the Department of Math and Computer Science. The department offers Bachelor's degrees in Computer Science, Applied Math, Liberal Arts Math, and Math Education. A strong commitment to teaching excellence is required, together with a keen interest in recent development and trends in the field.

Rank and salary are open, competitive and based upon qualifications. Millersville boasts an excellent fringe benefit package and is ideally located in the heart of Pennsylvania Dutch country, less than three hours from New York City, Washington, D.C., Baltimore, Philadelphia, the Jersey Shore and Pocono Mountain resort areas.

Reply by November 10, 1982, by sending transcripts, and three letters of reference to:

Dr. James A Steger, Chairperson
Department of Math
and Computer Science
Millersville State College
Millersville, PA 17551

Millersville State College earnestly seeks and is eager to receive applications from women and minority candidates.

APL

Current openings in N. & S. Calif.
Pgmer to Sr. Tech. Mgr. 25-45 K.
College Deg.
3-10 yrs APL desired.

NATIONAL PLACEMENT OF PROFESSIONALS WHO USE & ENJOY APL
(incl. contractors)

MICHAEL SUNDAY
(415) 893-9711
Sunday & Assoc's
374 17th Street
Oakland, Ca. 94612
(Employer retained)

ATTRACTIVE OFFERS AT IPA, SAUDI ARABIA

Institute of Public Administration (IPA) has an immediate openings for very experienced and qualified Computer Specialists, as:

- System Programmer (MVS JES2 TSO).
- Data Base Administrator (IMS/DL1, TOTAL)
- Product support (User-Interface) Programmer/Analyst (TSO CICS).

FOR AN IBM 3033/S

BENEFITS:

IPA OFFERS:

- Attractive salaries (In the range of US $.36,000 - 70,000 Per year depends on qualification and experience).
- Furnished Apartment.
- Airline Tickets for the Specialist and his family.
- 45-days paid vacation.
- Free Medical Treatment at Public Hospitals.
- Etc...

Tax-Free Income in Saudi Arabia.

THOSE WHO ARE INTERESTED SHOULD WRITE TO:

INSTITUTE OF PUBLIC ADMINISTRATION,
P. O. BOX 205,
RIYADH,
SAUDI ARABIA.

TELEPHONE: 4777969

TELEX: 201160 IPADMIN

WANT A CAREER IN ELECTRONICS?

Utilize all of your training and schooling from the military and civilian to troubleshoot and repair various computers, communications and instrumentation systems with our non-advertising clients. Full line of benefits. Nationwide locations.

CALL NOW - TOLL FREE
800-338-4371
Chicago (312) 621-0120
24 hour answering service
or send resume to:
ELECTRONIC SEARCH
2000 Golden, Suite C-20, Dept. C
Arlington Heights, IL 60005
NO FEES AND CONTRACTS

Up Your Career

Earn your MBA in DP or MANAGEMENT through our off campus degree program, no residence required. You challenge college credit through what you have learned from experience, also directed home study. Send resume for no cost evaluation.

Rockwell University of Arizona
4041 N. Scottsdale Road
Scottsdale, Arizona 85251
(602) 941-1266

position announcements | position announcements | position announcements | position announcements | position announcements

EDP OPPORTUNITIES

CICS Software IDMS MVS Manager $60M
MBA's internal Consultant Office of the future, office automation $55M
PROJECT/Mgr IBM 4300 VM/CMS Fin'l/Acctg new system development $55M
CICS 1.5 MVS 3033, Staff 2 tech & related product responsibilities $50M
SYSTEMS 34 Mgr R.P.G. MSG Appl, Staff 15, L.I. loc $45M
WANG Systems Developmt, Fin'l Applicatns, Maj banking firm ... $43M
DATA General AOS C130, Investmnt system Developmnt & Enhancement $41M
EDP Audit Project Leader, Pre-implementation. 10% travel $41M
ACTUARIAL 4 Exams, Cobol Systems/Analyst $40M
QS Cobol Program, Im IMS, maj corp 'will train you ... IMS degree ... $37M
FINC'L Analyst, MBA Fortran MODEL $35M
VOICE & Data Com lines, Modems Multiplexes $33M
WANG VS 100 Cobol Sys Developmnt, Telecom W/P Project Leader $31M
FORTRAN Ramis VM/CMS Fin'l sys Dev $31M
EDP Audit Data Center, Pre-implementation 50/50% $30M
FORTRAN VM/CMS focus maj conversion ..... $27M+
MGR VOICE Data Bell Bunker Ramo, Colorado/West Coast ..... $ Open

Call Bill Berrell (212) 349-3610
WM. HARRIS ASSOC.
150 Broadway agency NY, NY 10038

DATA PROCESSING PROFESSIONALS

DATA RESOURCE CORPORATION, headquartered in Atlanta, is a leader in quality Contract Programming and Consulting. Our continued growth in the Southeast and Southwest has created opportunities for versatile Professionals with state-of-the-art skills in Programming and Systems Design.

We are currently seeking individuals with at least 3 years of diversified programming experience, strong technical backgrounds, and who possess the desire to work in various stimulating Data Processing environments. IMS and CICS skills are of special interest, as are the abilities to travel or relocate.

We can offer you competitive salaries and comprehensive benefits programs, including bonuses and profit sharing. If you've been searching for a growth opportunity with a dynamic and progressive company with a Management team that 'puts people first' then DRC is your answer.

For immediate consideration, please call BECKY FINLEY at 1-800-241-8002, or send your resume to:

DRC
DATA RESOURCE CORPORATION
3301 Buckeye Rd.
Suite 103
Atlanta, GA 30341
(404) 455-7360
An EOE M/F

NORTH CAROLINA

If you qualify for positions in the $20,000 to $40,000 range, contact us in total confidence concerning opportunities in the Carolinas. We specialize in Data Processing professional placement. Our clients pay our fees and provide relocation assistance.

ROMAC
2000 W. First Street
Winston-Salem, North Carolina 27104
919-725-1933

Join the IMS/VS Team in San Jose

. . . to have a people-oriented environment receptive to new ideas . . . to excel in ease of use, technology, reliability and value . . . to be foremost in quality, providing machines and systems that are defect-free.

These are our goals at IBM. If you are a highly motivated, creative, and dedicated computer professional, and have experience with MVS and IMS/VS internals or are familiar with high performance, high reliability Data Base Management Systems, and have coding experience in BAL, then the IMS/VS team is interested in you.

We also have opportunities on our Language development team if you have experience in Compiler design/development.

Where? At IBM's Santa Teresa Programming Center — the modern programming development center designed specifically for programmers. Our location, nestled in the foothills of San Jose, is another reason to consider IBM. You'll live in a mild, sunny climate in an area with bountiful cultural and educational opportunities. You'll be an hour from San Francisco and just 30 minutes from the Pacific Ocean.

We will be conducting interviews

in Chicago
September 21-23

To arrange for an interview on these dates, please call (312) 565-1000 between 10 a.m.-10 p.m. and ask for the IBM recruiting suite.

in New York City
October 11-14

To arrange for an interview on these dates, please call (408) 463-2409 COLLECT between 3 p.m.-8:30 p.m. Eastern Daylight Time.

Or, if you prefer, send your resume in confidence to IBM, Department J16S, 555 Bailey Avenue, San Jose, California 95150.

IBM is making Data Systems and Languages even better...for the 80's and beyond. Join our team.

IBM

An equal opportunity employer

SYSTEMS ANALYST

We have the 'state-of-the-art' equipment and small town environment you're looking for. The makers of Schwan's Ice Cream and Tony's Pizza are seeking professional DP personnel to help meet the needs of our rapidly growing company. Work with large scale honeywell equipment in a comfortable, congenial and professional environment. Or present needs are for two Systems Analysts with a minimum of 6 years experience to work in our corporate headquarters in Marshall Minnesota. Contact Linda Nelson at (612) 546-2340.

Suite 148
Shelard Tower
Highway 12 & County Rd. 18
Minneapolis, MN 55426

FLORIDA

USER SYSTEMS SERVICE ANALYST

Leasco position available with large volume corporation based in Ft. Lauderdale. The ideal candidate will have hands on knowledge in the quality assurance area and sound design skills of production control applications. You will be interfacing with in-house users and DP operations. Exposure to MVS and/MS highly preferred. No coding at this level! Company offers state of the art IBM hardware, superb benefits and relocation package!

Salary to 33,000

HALF

Bonnie Gauz

HUMBERT HALF OF FORT LAUDERDALE
7770 W. Oakland Park Blvd. Ste 318
Fort Lauderdale, FL 33351
(305) 741-4800

PROJECT MANAGER ADMINISTRATION AND BUSINESS SYSTEMS

RESPONSIBILITIES: Maintain high project and team management skills. Must provide the leadership and guidance to other team members to maintain a motivated and successful team. The candidate must resolve user application computer related problems in a manner that reflects a dedication to achieve a timely and effective solution. Ensures accurate estimate for full accountability of teams effort. Responds to call-ins and makes required changes to ensure good computer service for users. Develop, train and provide guidance to new and junior team members. Makes recommendations and alerts data processing management about needs, problems and concerns of users and staff.

QUALIFICATIONS: BS degree and seven years related data processing experience or the equivalent. Insurance background, IBM mainframe experience desirable.

COMPENSATION: Salary range is $28,404 to $36,900 based on qualifications plus a complete package of company benefits.

Please send resume and salary history in confidence to:

PLAN SERVICES, INC.
P.O. Box 30006
Tampa, FL 33630
An Equal Opportunity Employer

SR. PROGRAMMER ANALYSTS

Ford Aerospace has an extensive history of technological and developmental accomplishments associated with NASA man and unmanned space missions. With the success of the space shuttle, continuing and new requirements offer challenges that are rewarding to the participants and to science. We are interested in having you join a company dedicated to professionalism and challenging assignments, especially if you have the following background.

SR. PROGRAMMER ANALYST

Four to six years experience in business systems using COBOL, large scale IBM computers, OS/MVS with IMS experience desirable. Particular applications experience in manufacturing systems is desirable.

APPLICATIONS PROGRAMMER ANALYST

Three to eight years experience in the following:

- IBM OS/MVS
- TSO
- ADF
- PL/1
- 370/168 4341 Computers

You are eligible for assignments responsible for applications design and implementation for large scale applications involving interactive and batch programs, and the collection of data relative to the Space Shuttle Mission Control Center configuration. This comprehensive and complex project will provide NASA Space Shuttle flight control with a system to plan mission command control and monitoring configurations.

We offer competitive salary and a top of the line comprehensive benefits package. Interested and qualified individuals should send resumes to: **Ken Butler, Ford Aerospace & Communications Corporation, Dept. AJC, P.O. Box 58487, Houston, Texas 77258.** We are an equal opportunity employer, m/f.

Ford Aerospace & Communications Corporation
Space Information Systems Operation

Programmers

SYSTEMS PROGRAMMERS & ANALYSTS

Fairchild Space & Electronics Company is seeking two experienced professionals to join the Management Information Systems team.

VM SYSTEMS PROGRAMMER –

This position requires a sound knowledge of the VM and CMS environment and an ability to maintain VM program products. A strong assembly language background plus the ability to maintain and modify CP and CMS source code is also required. Familiarity with MVS/SP, CICS 1.5, ACF VTAM is a plus. Requires a BA in Computer Science or equivalent, plus 3-5 years relevant experience.

SYSTEMS ANALYST –

This position requires capabilities in the evaluation, design, coding and implementation of business systems. Specifically IBM 370/OS or 4341/OS, COBOL, CMS and CICS experience is preferred. Requires a BS in Computer Science or equivalent, plus 3-5 years relevant experience.

We offer competitive starting salaries and excellent company benefits that include generous life and health insurance plans, educational assistance, stock plan, retirement, etc. Please forward your resume, including salary requirements and history, to Professional Employment, 20301 Century Blvd., Germantown, MD 20874, Dept. CW-81.

FAIRCHILD
SPACE & ELECTRONICS COMPANY
An Equal Opportunity Employer

MIS MANAGER

Kingdom of Saudi Arabia

We are an American Company which is expanding our efforts in the Kingdom of Saudi Arabia. We are responsible for designing, installing and maintaining a large-scale EDP system for the government of Saudi Arabia. You will need 10-15 yrs. exp. in data processing with a minimum of 7 yrs. exp. in management. Your management experience should include budget (profit/loss preferable), equipment selection, employee selection and executive reporting relationship.

Your technical experience should include operations exp. with large-scale computers utilizing teleprocessing, IBM/IBM equivalent large-scale hardware and software.

You will have substantial interface responsibilities with the Saudi Arabian representatives. We prefer you to have experience dealing with international clients. This position offers many outstanding compensation advantages and features. This position is family status.

Please respond to:
CW-A3322
Computerworld
Box 880
Framingham, MA 01701

PROGAMMER/SYSTEMS ANALYST

Position available for persons with experience (min.4 years) in ANY of the following: IBM 370 Series or compatible, CICS, CMS, TSO, DMS 1100, Model 204, S2K, DBMS, WANG, C/T and other Mini's, UNIVAC 1100, DEC VAX 11/780, FORTRAN & HP-1000, COBOL.
Requires degree plus 4 years experience. Please call Mrs. Antonucci, (301) 587-4580.

Send resume to:
Data Transformation Corp.
8121 Georgia Ave., 3rd Floor
Silver Spring, Maryland 20910
EOE M/F

SYSTEMS ANALYSTS AND PROGRAMMERS FOR SUNBELT LOCATIONS

Job dissatisfaction, complacency, and frustration are the biggest obstacles to overcome to achieve one's career goals. Every day new career opportunities pass us by because we are unaware of their existence. Let us help you abreast of what your true value is in the market place. Absolutely no obligations, please call or write Keith Reichle, CPC, Data Processing Specialist

Dunhill
OF CHARLOTTE, INC.
[illegible]
Charlotte, North Carolina [illegible]
[illegible]
(NC Only)
[illegible]

EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS

National Openings With Client Companies
and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, modem, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide, you decide

RSVP SERVICES, Dept. C
Suite 160 One Cherry Hill Mall
P.O. Box 5013
Cherry Hill, New Jersey 08034
(609) 667-4488

RSVP SERVICES, Dept. C
Suite 211 Dublin Hall
1777 Walton Road
Blue Bell, Penna. 19422
(215) 629-0595

RSVP SERVICES
Employment Agents for Computer Professionals

PROGRAMMER. In charge of structuring, coding, & debugging programs for applications relating to financial institutions. H.S. diploma or equiv. Must have knowledge of COBOL & ASSEMBLER. 2 yrs or 2 yrs in programming. $446.50 per wk to work 35 hrs/5 days/wk. PLEASE SEND RESUMES TO: **Atlantic Information Systems, Inc. 575 Madison Ave. Ste. 1006 NYC 10022.**

FORD & FORD
EMPLOYMENT SPECIALISTS

SOFTWARE SYSTEMS

Several major manufacturers and applications firms have told us about their plans for growth in the coming year. Openings exist now for individuals with 2 or more years of experience in Operating Systems, Design & Development, Analysis and Project Management.

Candidates must desire to provide solutions to a wide variety of technical problems and should have some programming capability. Typical positions involve systems architecture, data base, editors, advanced language concepts, structure, telecommunications, mini, micro, and main frame, robotics, manufacturing systems, financial, and many other interesting state-of-the-art areas.

IF YOU LIKE WHAT YOU'RE DOING BUT DON'T LIKE WHO YOU'RE DOING IT FOR, you should call me this week or send a letter along with your resume stating your salary history, relocation options, and, most important, your career objectives.

Frank Spelluzzi (617) 329-5600
Ford & Ford, Box 597, Dedham, MA 02026

An Equal and Better Opportunity Employment Service

Fees paid by employers

MANAGER COMPUTER SERVICES

Shore Memorial Hospital is a 279-bed acute care hospital located just south of Atlantic City, New Jersey.

We are seeking a Computer Services Manager who will be responsible for building a new department and managing the conversion from IBM System 34 to IBM System 38.

Applicants should have a minimum of 5 years experience in the field of hospital data processing and information systems. 2 of those years should be in a supervisory capacity.

A Baccalaureate Degree in a related discipline necessary. Qualified applicants should send resume including references and salary desired in confidence to or call:

PERSONNEL DEPARTMENT
609-653-3724
SHORE MEMORIAL HOSPITAL
New York Avenue
Somers Point, New Jersey 08244
Equal Opportunity Employer M/F

Detach here, moisten and seal envelope securely before mailing.

Fold and insert order form (attached through binding) and remittance here.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT

COMPUTERWORLD

375 Cochituate Road, Rte. 30
Box 897
Framingham, MA 01701-9985

position announcements | position announcements | position announcements | position announcements | position announcements

Evangelical Christian Ministry seeks qualified individuals for the following positions.

SUPERVISOR OF COMPUTER OPERATIONS

Must have a minimum of three years recent experience on large O/S MVS JES2 system, 3705, Laser Printer, IMS, IDMS, CICS, TSO. Should have working knowledge of O/S JCL and Telecommunications equipment. Must possess ability to lead and work with people

PRODUCTION SUPPORT ANALYST

Must have minimum two years solid O/S JCL experience in Problem Control environment, be able to trouble shoot major problems with minimum supervision. Should be familiar with TMS, JES2, TSO/SPF, UCC11 and operation of O/S console (Minimum of one year hands on as lead operator)

SUPERVISOR OF PRODUCTION CONTROL

Candidate will have thorough knowledge of Panvalet Library maintenance, O/S JCL, Job Scheduling, TMS, TSO/SPF, UCC11 and Problem Control. Must have a minimum of two years solid Production Control experience in medium to large MVS/JES2 environment. Must be able to interface well with users and train subordinates in above areas

PRODUCTION SUPPORT SPECIALIST

Individual must have minimum of three years Production Support program development. Thorough knowledge of O/S JCL, TSO/SPF, Panvalet, C-LIST, MACROS, COBOL, and preferably PL1. Person will be responsible for developing software productivity aids for Production Control.

If you are qualified and feel led to serve, please apply to:

CBN Personnel Dept.
CBN Center
Virginia Beach, VA 23463

CBN is an Equal Opportunity Employer

"WE PROMOTE COMPUTER PEOPLE"

INTERVIEW & HIRING COSTS (INCL. RELO.) PAID BY COMPANIES

TOLL FREE
1(800) 258-7328

Exeter Associates

NATIONAL RECRUITING CONSULTANTS

COMPUTER PARK P.O. BOX 4979
HAMPTON, NEW HAMPSHIRE 03842
(603) 926-6712

A COMPONENT OF EXETER INTERNATIONAL, INC.

PROGRAMMER BURROUGHS MAINFRAME COBOL

If you have outgrown your present situation, then perhaps the time has come for a change. A solid programmer position has become avail with one of Wall St's most prestigious financial service/brokerage houses. 2+ yrs large scale Burroughs blend with solid COBOL programming essential for consideration. Superb opply for the qualified candidate to enter a truly proficient environment. Good mobility & growth opply $31K FEE PAID

ROBERT HALF
OF NEW YORK, INC.
522 Fifth Avenue
New York, N.Y. 10036
212-221-0550 (agency)

DATA SYSTEMS DEVELOPMENT REVIEW
SYSTEMS REVIEW ANALYSTS

If you would like to present your recommendations on complex D/P problems... then you belong at Chase.

If getting totally involved in the development of exciting, diverse new data processing systems interests you, Chase Manhattan is where you belong.

From global telecommunications to home banking, our goal is to lead the industry in developing imaginative systems that go beyond the "state-of-the-art."

To meet these challenges, we are looking for Systems Review Analysts who have the vision to evaluate complex applications. We need professionals who are able to provide vital and creative contributions to the effectiveness, security, and control of advanced systems. If you have 3-5 years' "hands-on" development experience as well as a sound understanding of the principles of data communications and database, this is a unique opportunity to apply your knowledge and to influence senior managers to act on your ideas. A Bachelor's degree is preferred, and advanced qualification is a plus. In addition, some knowledge of applications in a banking environment would be highly desirable.

We offer excellent salary opportunities together with competitive benefits, including profit sharing and tuition reimbursement. Qualified and interested individuals are urged to send resumes, including salary history, in complete confidence, to: Ms. Marilyn C. Maleska, Vice President Human Resources, Chase Manhattan Bank, N.A., 1 New York Plaza, 16th Floor, New York, NY 10081. Chase Manhattan is an equal opportunity employer, F/M/H.

CHASE

SUNSHINE STATE

Florida's financial community is booming! Our clients need your expertise

Analysts/Prog's

Cobol with IMS DB/DC, CICS	to 30K
Cobol, GL, Payroll, IL, CL, DDA	to 25K
OS/MVS BAL	to 30K
DOS/VSE, Cobol, CICS, DL1	to 27K
OS/MVS, Cobol, SAS	to 25K
NCR Neat 3, Cobol, financial	to 28K
Burroughs Cobol, financial	to 25K

PROJECT-MGMNT

Proj. LDR - Dispose	to 38K
Proj. LDR - CPCS	to 35K
Proj. LDR - Insra	to 32K
Mgmnt Consultant	to 28K

Software Support

Sys Prog - MVS, CICS, VSE	to 38K
Sys Prog - IMS, NCP	to 38K
IMS DB Analyst	to 38K
SNA, BISYNCH Technician	to 35K
Z-80, PDP-11, Assembler	to 28K

Applications Programmer

Position for an Applications Programmer to develop and maintain a comprehensive set of data acquisition and analysis routines based upon a knowledge of real-time programming constraints and limitations. Computer programming experience in an experimental physical science environmnet is required, and knowledge of VAX-11 computers operating under VAX/VMS is desirable. The system to be developed consists of a multiple VAX network which is being implemented for nuclear-physics research with one of the worlds most advanced cyclotrons. Applicants should send a resume to Dr. Lawrence Tharp, National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI 48824-1321, prior to November 30, 1982.

Michigan State University is an Equal Opportunity Affirmative Action Employer

---

300 DP OPENINGS

(ALL Fee Paid)

Mfg Prog/Anal (Mfg apps, IMS/CICS)	25-35K
Bank Prog/Anal (Bank apps, COBOL)	20-25K
Prog/Anal (2 yrs COBOL, IBM 370)	20-28K
Prog Anal (RPG III or RPG II)	20-40K
Prog/Anal (2 yrs DEC PDP 11)	25-31K
Prog/Anal (2 yrs COBOL, UNI 1100)	23-32K
Prog/Anal (2 yrs IMS or CICS)	25-35K
Prog Anal (2 yrs COBOL, HONEY 66)	25-34K
Sys Anal (3 yrs IMS or CICS)	28-38K
Sys Prog (2 yrs OS or DOS/VSE)	23-38K
Prog/Anal (2 yrs HP 3000)	25-30K
DEC Software Engr (2 yrs PDP 11)	25-35K
Software Engr (2 yrs Z80, 8080)	25-40K
Microprocessor Elec Engr (2 yrs)	25-40K
EDP Auditor (2 yr EDP Audit)	24-32K

We are one of the largest employment agencies in the southeast - affiliated with 150 offices coast to coast

Rick Young - DP Dept.

CORPORATE PERSONNEL CONSULTANTS, INC.
3705 Latrobe Drive, Suite 210
Charlotte, NC 28211
704-366-1000

Director Software Development

We are a young Cambridge, MA firm specializing in sophisticated front-end database systems with proven market potential. We are seeking someone with extensive experience in program specification, project management, and database use to join us at the corporate level and assume the position of Director of Software Development.

This is an excellent opportunity for an experienced designer/manager to become involved as an equity participant in a company with excellent long-term potential.

Our firm is committed to product excellence and truly user-accessible systems with emphasis on the application of artificial intelligence technology to data entry and retrieval. Responsibilities will include program specification, and supervision of a programming staff. Experience in the use of artificial intelligence techniques, such as pattern matching and constraint propagation, is preferred.

This opportunity will not last long. Replies held in strictest confidence. Please send resume and salary history:

Reply to CW-A2328
Computerworld
Box 880
Framingham, MA 01701

position announcements | position announcements | position announcements | position announcements | position announcements

MID-CONTINENT COMPUTER SERVICES, INC., A LEADING SERVICE BUREAU FOR FINANCIAL INSTITUTIONS IS IN SEARCH OF RESULT ORIENTED INDIVIDUALS TO FILL THE FOLLOWING POSITIONS IN OUR DENVER OFFICE:

SYSTEMS SUPPORT MANAGER

RESPONSIBILITIES INCLUDE: Direct and coordinate all functions associated with vendor-supplied operating systems. Provide guidance and resource for Burroughs, TANDEM, Digital operating systems and data communication functions; Manage and direct the activities of a staff of 10 programmers; Assign, monitor and review all projects.

QUALIFICATIONS INCLUDE: 4-8 years technical background on Burroughs medium systems 2-4 years management experience BS in Computer Science or Electrical Engineering TANDEM, Digital operating systems and/or data communications experience preferred.

SENIOR PROGRAMMER ANALYST

RESPONSIBILITIES INCLUDE: Provide analyst and programming support on nationwide ATM and switch networks. Participate in the design of systems, application modules, and switch interfaces on TANDEM hardware.

QUALIFICATIONS INCLUDE: 4-8 years system design and programming experience. Heavy COBOL, Assembler, and EFT systems background BS in Computer Science or Electrical Engineering. TANDEM computer experience desired.

We offer an excellent compensation and benefit package which includes health, life, and dental insurance; profit sharing; vacation; bonus days; educational assistance; and good working environment. Interested candidates should send a resume and salary requirements to:

MID-CONTINENT COMPUTER SERVICES, INC.
5850 DTC PARKWAY, BLDG. 14
ENGLEWOOD, COLORADO 80111

Equal Opportunity Employer M/F

DATA PROCESSING PROFESSIONALS

Dynalectron Corporation is planning several new scientific and business development projects. To meet project requirements, a variety of DP skills will be required. These include the following:

- Project Managers
- Systems Analysts
- Programmers
- Technical Writers
- Systems Software Specialists
- Data Base Analysts
- Computer Operators
- Telecommunications Analysts

Interested applicants with experience in business or scientific applications on large, medium and minicomputer systems are invited to forward their resume in confidence to:

DYNALECTRON CORPORATION
Department 401-DRM
6801 Calmont Avenue
P.O. Box 12087
Fort Worth, Texas 76116

Dynalectron is an equal opportunity employer

Technical Service Specialist—Software

Racal-Milgo, Inc., the world's leading independent supplier of data communications equipment, has an immediate opportunity in our Miami Corporate Headquarters for a top-flight Technical Service Specialist—Software.

You'll support our software product line by training personnel, troubleshooting systems, and evaluating customers' needs, both on-site and in the office. To qualify, you should have a BS in Computer Science, at least 1 year of experience with real-time minis—PDP-11 running RSX-11M, and a knowledge of micro computers like the Intel 8080. Data communications experience would be a real plus.

We offer excellent salary and benefits including health/dental/life insurance, 100% tuition reimbursement, paid holidays, credit union, and three weeks paid vacation your first year.

For immediate consideration call ROBERT SCHNEIDER (COLLECT) at 305-797-3511.

Racal-Milgo® RACAL
6950 Cypress Road
Plantation, Florida 33317

We Are An Equal Opportunity/Affirmative Action Employer

SYSTEMS ANALYST

We are acquiring a state-of-the-art relational data base management system implemented in hardware as a back-end processor interfaced to VAX/VMS host. We are looking for an individual with in-depth experience in VAX/VMS system internals to provide technical software support services to Programmers, Systems Analysts and Operations personnel. The requirements for this position also includes a Bachelor's Degree in Business Administration, Mathematics, Accounting, Computer Sciences or related field.

EQUAL OPPORTUNITY EMPLOYER-M/F
Liberal Fringe Benefits
Must be a U.S. citizen
Replies held confidential

Send resumes to:
Trudie L. Rainey
Employment Section Chief
Post Office Box 14400
Las Vegas, NV 89114-4400

Reynolds Electrical & Engineering Co., Inc.

Systems/Applications Programmers:

WE'RE LOOKING FOR THE INDUSTRY'S TOP TALENT!

Consulting Assignments in:
IBM IMS
CICS
IDMS
DEC 1022
HONEYWELL IDS II

Positions available in these areas:
BOSTON (617) 444-8350
HARTFORD, CT. (203) 563-8372
WASH, D.C. (703) 892-0200

CALL COLLECT
the Compdata office nearest you

COMPDATA
Executive Offices
161 Highland Avenue
Needham, MA 02194

An Equal Opportunity Employer

LEAD PROGRAMMER/ANALYST

Leading health care provider located in Detroit has opening for experienced Systems Programmer interested in a challenge. You will be given primary responsibility for a networked database run on a super-mini, with opportunity for all aspects of analysis, design, testing, and implementation. You will share your knowledge and expertise with other staff programmers and users of the system. At least 5 years programming experience is required including 2 years of Cobol Business Systems. Bachelor's Degree or equivalent is necessary. Competitive salary and fringe benefits. Send resume to:

Reply to CW-A3327
Computerworld
Box 880
Framingham, MA 01701
An Equal Opportunity Employer M/F/H

OVERSEAS ASSIGNMENTS

CONTRACTS FOR SIX MONTHS TO TWO YEARS

PROJECT LEADER: MBEE or CS. Requires five years experience in petroleum engineering or geoscience.

SYSTEMS PROGRAMMERS (5): Telecommunications or systems scheduling in large mainframe environment using MVS, JCL, TSO/SPF, VTAM, ACF/NCP.

CONSULTANTS (5): Minimum of one year user training and strong oral communications skills. Must know TSO/SPF, MVS, PL 1, Fortran and IBM utilities.

OPERATION SHIFT LEADER: Experience with multiple 3033's using JES II and DASD.

Salaries are contingent on skill and experience. Excellent tax benefits for long term assignments. All interviews will be conducted through our Houston offices.

960-9102

John Leslie Connie Volk James Woltje

DPCONTRACT ASSOCIATES
4151 Southwest Freeway, Suite 450
Houston, Texas 77027

ADABASE DBA

Southern California Area

Install and support ADABASE software using SMP with emphasis on Data Base Administration. Provide secondary support for CICS. Provide leadership in corporate direction and planning for the database. Develop an interface between CICS and ADABASE 4.1. Review and provide technical consultation regarding DBA functions handled by applications areas and any problems that arise. Must have proven ability to manage projects from inception to completion and must have excellent communication skills and the ability to interact with all levels of management effectively.

We offer a generous salary and fringe benefit package including a relocation program as well as a conveniently located and attractive working environment with the latest hardware and software technology including the IBM 3081. Send your resume including your current salary to:

CW A-3326, Computerworld, Box 880, Framingham, MA 01701

Equal opportunity employer M/F/H

DALLAS

SAUDI ARABIA

Have several positions available. These include mgmt. systems analysis, legal/contract admin., training, data base, software and communications. Benefits outstanding. Start date flexible. Salary open.

Contact: Randy Hebern

ROBERT HALF
OF DALLAS, INC (214)363-3300
Two NorthPark East Suite #750
Dallas, Texas 75231

DNR 1100 ANALYST/SUPERVISOR STATE OF FLORIDA

The State of Florida, Department of Environmental Regulations, has an opening for a Computer Database Analyst. Responsibilities would include acting as a team leader for the design and maintenance of online/DMS pollution source monitoring systems.

Qualified applicant must possess a minimum of four years experience in computer system analysis and design, one year of which must be in a supervisory capacity. Univac 1100 DMS experience preferred. Salary $20,898 - $26,417 (negotiable). Application deadline 9/30/82. Please send letter of application and resume to:

Jon Winter
Chief, Bureau of Information Systems
Room 400, Twin Towers Building
2600 Blair Stone Rd
Tallahassee, FL 32301
An Equal Opportunity Employer

CORP. SOFTWARE SPECIALIST To $50,000

Fortune 200 corp. wants technical software systems expert for mainframe IBM centers worldwide. Exp. with CICS, OS and DOS, capacity planning necessary.

RESPOND IN CONFIDENCE TO:
215/546-9400

Fortune
Personnel Consultants of Philadelphia, Inc.
1528 Walnut Street
Philadelphia, PA 19102

position announcements | position announcements | position announcements | position announcements | position announcements

MARTIN MARIETTA AEROSPACE

DATA PROCESSING OPPORTUNITIES

Martin Marietta Aerospace, NASA's Contractor for the Space Shuttle External Tank has immediate openings for Data Processing professionals. Because we actually manufacture the external tank, you'll get to see the actual results of your efforts.

Immediate opportunities exist for individuals experienced in:

- **Business Systems - UNIVAC 1180, DATABASE, DMS 1100, T.I.P., W.I.P., Real Time Applications**
- **Scientific Systems**
- **Process Control**
- **Data Base Management Systems**
- **Network Controller**
- **MRP's**
- **Operations Research**

We offer competitive starting salaries and paid company benefits. These opportunities exist at our Michoud Assembly Facility located in suburban East New Orleans.

Qualified candidates interested in learning more about these opportunities at Martin Marietta should forward resumes, including salary history to: Martin Marietta Aerospace, Denver Glazier, CW-920, P.O. Box 29304, New Orleans, Louisiana 70189. We are an equal opportunity employer, m/f/h.

MARTIN MARIETTA

SOFTWARE & SYSTEMS PROFESSIONALS

If you normally use a third party contact to explore new and creative career paths...

Contact Margaret Freedman:

(215) 568-5551

Mon.- Fri., 9/20 - 9/24, 9 AM - 5 PM

OR CUT THIS OUT!!

Mail this coupon to:
SEARCHMASTERS, INC.
Dept. C-920
P.O. Box 2141-B, Philadelphia, PA 19103
Phone: (215) 568-5551

NAME _____
ADDRESS _____ BUSINESS _____
PHONE: HOME _____ SAL. REQ. _____
CURRENT SALARY _____

CHECK YOUR EXPERIENCE:

- ☐ Real Time Programming
- ☐ S/W Design & Development
- ☐ Systems Programming
- ☐ Scientific Applications
- ☐ Military Applications
- ☐ High Level Computer Languages
- ☐ Assembly
- ☐ Display
- ☐ Test & Integration
- ☐ TM

SALARIES TO $50K. LOCAL INTERVIEWS WILL BE HELD
I'M INTERESTED IN THE FOLLOWING LOCATIONS:
☐ Northeast ☐ Southeast ☐ Mid-Atlantic

Creative Software and Systems Professionals let SEARCHMASTERS make your job search easier...and more profitable, too! We represent several major, multinational corporations seeking software (Sr. and Intermediate Level) professionals who want the recognition, rewards and advancement opportunities their talents deserve. If this description fits you—and you'd like to strengthen your skills in a state-of-the-art environment dedicated to technical excellence—contact us NOW! By phone or just fill in the above coupon and mail to: SEARCHMASTERS, INC., Dept. C-96, P.O. Box 2141-B, Philadelphia, PA 19103, (215) 568-5551. The few minutes spent calling us or filling out this coupon could be your most productive today.

search masters

SAUDI ARABIA

SYSOREX INTERNATIONAL, a California Corporation and a rapidly growing systems management company now developing innovative multi-technology systems in Saudi Arabia seeks:

Training Manager

Manage EDP instructors for Saudi Arabian users. Responsible for management of trainers, involved in instruction of computerized information systems. Based in SAUDI ARABIA. Arabic fluency not required. Degree necessary.

DP User Instructors

Experience in COBOL programming using large-scale VM/SP, IBM, OS/MVS, CICS, TP software in a distributed EDP environment. Applicants should have 1-2 yrs. training/instruction background in DP. ARABIC/ENGLISH BILINGUAL VERBAL AND WRITTEN SKILLS REQUIRED. USA or KSA citizenship required due to Visa restrictions.

We offer such benefits as medical, life, ADD, disability, profit sharing, 5 day work week, overseas premium. While based in Saudi Arabia, you will additionally receive 30 working days vacation, 15 holidays, free furnished family housing, free children's education, annual return home travel, paid relocation expenses plus eligibility for new liberal tax exclusions just recently passed.

Saudi Arabia positions are family status and require a 1 yr. commitment in Saudi Arabia for the SYSOREX staff. Please send resume to Personnel, SYSOREX INTERNATIONAL, INC. 10590 N. Tantau Ave., Cupertino, CA 95014. (408) 996-9363. INDIVIDUALS ONLY APPLY.

SYSOREX
Sysorex International Inc.

CHICAGO
DATA BASE ANALYST

Team up with a leader! Provide TECHNICAL and MANAGEMENT guidance for this world-wide corporation. 6+ years in DP. COBOL, IMS plus a degree will give you the chance to prove how good you are! $35,000.

Contact:
Sandy Wells

ROBERT HALF OF CHICAGO, INC.
35 E. Wacker
Chicago, IL 60601
(312) 782-6030

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Laboratory for Computer Science

Researcher in Educational Computing Group to assist in development of a follow-on system to LOGO. This system will be designed as a highly interactive computational environment for non-expert programmers, which integrates programming, data-manipulation, communication and graphics. Implementation is currently done using LISP machines.

Applicants should have knowledge of LOGO and have considerable experience with large-scale systems development in LISP. Prior experience with LISP machines is desirable.

Salary range: $15,000 to $22,000

Send resumes to:
Patricia Anderson
Massachusetts Institute of Technology
Laboratory for Computer Science
545 Technology Square
Cambridge, MA 02139

Communications Systems Programmers

We're Wicat Systems, a well established and stable company, situated in one of the most pleasant parts of Utah yet involved in the very forefront of technological advance. Our products range from the first educational video disc to interactive video disc training aids for automotive troubleshooting.

You must have a detailed knowledge of the IBM bisync protocol for porting IBM 3270, 2780/3780 interactive emulation packages to microprocessors and a minimum of five years direct data communications programming experience. A BS in computer science or EE or comparable job experience and training is required. You must be capable of designing, developing and troubleshooting software programs for computer-based data communications systems.

Send detailed resume and salary history to

WICATsystems

Personnel Department
WICAT Systems, Inc.
P.O. Box 530
1875 South State Street
Orem, Utah 84057

Equal Opportunity Employer M/F

position announcements | position announcements | position announcements | position announcements | position announcements

MPG is shaping the future in software

Be an MPG SOFTWARE ENGINEER

Participate in the design, development, and management of MPG's future generation of software.

MPG takes the most advanced software technology available, puts it to practical use, and supports it with high-caliber professionals. The result is five successive years of growth in excess of 50% per annum.

MPG is a leading producer of generalized systems software for the IBM marketplace, with

- RAMIS II, the first product to integrate a user-oriented, English-like nonprocedural language with a comprehensive DBMS
- The MPGSWIFT product line, an efficient, economical and easy-to-use TP monitor, data entry system, and online program development tool

Candidates must be highly creative and self-motivated with demonstrated experience in IBM assembler language programming, DBMS or teleprocessing, and software development. Specific experience in operating systems interfaces, in access methods, in terminal support (3270 protocol, graphics support) are also desirable.

MPG offers an excellent working environment, including our own computers and private offices with terminals and flexible work day. We reward high achievement with excellent performance incentives. Salaries are very competitive and our benefit package is one of the best in the industry.

MPG is headquartered in Princeton, New Jersey. If you want what we offer and have the experience we need, send your resume in confidence to: Juanita Bodden, Mathematica Products Group, P.O. Box 2392, Princeton, New Jersey 08540.

Shape the future with

Mathematica Products Group

Yours and ours

An Equal Opportunity Employer M/F/HC

SYSTEMS ANALYST

St. Luke's, a progressive 620 bed Regional Medical Center, has an immediate opening for an experienced individual to assume responsibilities for systems design, analysis and implementation of hospital oriented systems. The individual we are seeking will have the opportunity to grow with our expanding DP department. Candidates should have IBM System 38 background, experience in systems design and analysis, knowledge of RPG & and/or RPG III language, good written and oral communication skills, and the ability to lead a project team. **For further information call collect (319) 369-7010 or send resume including salary history in confidence to Darrell Walters, Employment Manager:**

ST. LUKE'S METHODIST HOSPITAL
1026 A Avenue, NE
Cedar Rapids, IA 52402

DIRECTOR INFORMATION SYSTEMS

A challenging career opportunity to manage a hospital-wide financial and medical information system. Responsibilities include systems analysis and planning, computer applications, integration of other stand-alone systems, guidance in financial modeling and management of computer operations, programming of and hospital-wide staff training and computer use.

Qualifications: MBA or related degree required with major in systems analysis preferred. Minimum three years experience in information systems, programming and computer operations. Hospital background preferred. Position is with a major hospital located in Michigan prime four season resort area. Submit resume and salary requirements to:

Employee Relations
Munson Medical Center
6th Street
Traverse City, MI 49684
An Equal Opportunity Employer

SYSTEMS CONSULTANT

To design and develop a realtime database/data communications for inventory control. Salary $24,000/year, 40 hour/week. Requirements: Bachelor of Science in Computer or Management Science plus 2 years post grad field experience. Must have experience in Inventory Control, Cobol and Cobol 74 languages plus experience with Burroughs B-1800 or B-6800 Computers, DMSII Databases and Gemcor Data Communication System. Send transcripts and resumes to **June Carroll, Job Service, 505 Washington Ave., St. Louis, MO 63101. Refer to number 561785.**

Equal Opportunity Employer

COMPUTER SYSTEMS AUDITOR

Under the Internal Audit Office, performs audits of existing and proposed computer systems, develops audit program packages and participates in management audits. Qualifications include a Bachelor's Degree. Experience in the design of business computer systems, accounting methods and practices. Previous experience in EDP auditing preferred. Thorough knowledge of two higher level programming languages. Salary to mid twenties. Send resume to: **Jack Podeszwa, Employment Manager, Office of Personnel, West Virginia University, Morgantown, WV 26506.**

An Equal Opportunity/Affirmative Action Employer M/F

PROGRAMMER/ANALYST

Here is the opportunity for a talented programmer/analyst to join a successful retail organization.

Candidate will be given an opportunity to demonstrate abilities in projects of all sizes, working independently or as part of a team, as the occasion dictates. Position will require research and documentation of current applications, design and evaluation of program and system enhancements, and responsibility for designing new programs for a wide variety of retail business and financial applications.

Qualifications include several years of BASIC programming experience, creativity, good business sense, problem solving and writing skills, and the ability to effectively communicate with others.

This position offers upward mobility in this industry's most rapidly expanding organization. We offer an excellent salary and benefit program.

Send resume with qualifications and experience, including salary expectations, in complete confidence. No calls accepted.

Robert W. Darvin, President
SCANDINAVIAN DESIGN
603 Worcester Road, Natick, MA 01760

scandinavian design

INSTRUCTOR DATA PROCESSING

QUALIFICATIONS: Bachelor's degree in Computer Science or related field and a minimum of 2 yrs. work exp. in D.P. required. Master's degree in Computer Science with business orientation & knowledge of systems analysis & design as well as operating systems preferred.

DUTIES: Instruct lecture & lab courses such as Intro to D.P., Computer Operations, Micro Computers, RPG II, Fortran, COBOL, etc.

SALARY RANGE $16,743-$29,286 for 10 1/2 months. Depending upon education and experience.

STARTING DATE: January 5, 1983.

Please forward resume to:

Director of Personnel Services
McLennan Community College
1400 College Dr., Waco, TX 76708
(817)756-6551, ext. 321 AA/EOE

SYSTEMS ANALYST. Design & implement computer systems related to financial institutions. Maintenance & enhancement of these systems, & provide vital skills which ensure their successful & cost effective operation. Bach. degree or equiv. in ComSci/Math/Physics. Must have knowledge of COBOL. 2 yrs or 2 yrs in programming. $536.50 per wk to work 35 hrs/5 days/wk. PLEASE SEND RESUMES TO: Atlantic Information Systems, Inc. 575 Madison Ave. Ste. 1006 NYC 10022.

SOUTHERN OPPORTUNITIES

S/A	FORTRAN Mktg	$25K
P/A	RPG II or III	$25K
P/A	COBOL or PL1 or NEAT3	$30K
Sr Prog	Banking COBOL	$27K
Sr P/A	Mfg/COPICS or MAPICS	$36K
DP Mgr	Mfg MRP	$40K
Sr S/A	COBOL Honeywell	$28K
Sys. Prog.	DOS/VSE/CICS	$33K

ROBERT HALF OF LOUISIANA, INC
4000 One Shell Square
New Orleans, La. 70139
(504) 524-2773

JEFFERSON BANK SHARES

A Multi-Bank Holding Company in Central Virginia with over 700 million in assets seeks a manager of systems and programming to direct staff of 10. Minimum of 5 years experience with NCR equipment in a CIF and FOCUS environment. Prior management background required. Salary commensurate with experience.

Contact Ken Boyd
P.O. Box 7067
Charlottesville, VA 22906
(804) 973-4467
EOE

COMMISSIONER OF COMPUTER INFORMATION CENTER

The Commissioner of the Office of Computer Information Systems develops and coordinates information management policies for entire organization. Excellent opportunity for innovative manager to work in progressive D.P. environment. Requires excellent communications/business skills and a strong management background. The Center is running an IBM 4341 under VM with an extensive on-line network. Dutchess County is located in the scenic Hudson Valley, 1 1/2 hours from N.Y.C. Offering excellent fringe benefits package. Salary negotiable. Send resume in confidence to:

Lucille P. Pattison
County Executive
22 Market Street
Poughkeepsie, NY 12601
(914) 485-9881
Dutchess County is an Equal Opportunity/Affirmative Action Employer

TELECOMMUNICATIONS MANAGER

TO $55,000

This is a high visibility, growth position with a Fortune 500 company. Solid Voice, Data and Office Automation experience is required.

Contact:

Fortune
Personnel Consultants
154 Broad St. Dept C.
Nashua, NH 03063
(603) 880-6000

APL PROGRAMMER/ANALYST

Ivy Financial Corp — Largest U.S. Rare Coin & Collectibles organization needs APL wizard with 3-6 yrs exp in APL business apps to be Dir of Prog Devel in small IBM/4331/VM/CMS shop. Excellent benefits. Shop is APL only. Report to VP of DP. Degree not req'd. Responsible for all SW systems. 65% new devel. Relocation exp paid. Salary 25-30K. Cobol batchist need not apply. Send resume or call Chuck Chadwick
Ivy Financial Corporation
7950 Elmbrook, Suite 100
Dallas, Texas 75247
In Texas 214-631-1110
WATS: 800-527-9250

EXPERIENCED SYSTEMS ANALYST

Current knowledge and experience with IBM OS 360/370, JCL, WYLBUR, FORTRAN, or equivalent programming.

Good technical writing skills.

Knowledge and experience in Manufacturing Applications, Statistics, and Data Base Technology.

Challenging position pioneering new methodologies.

Send Resume in Confidence to:

W.R. Smith, V.P.
NUSAC, Incorporated
1850 Samuel Morse Drive
Reston, Virginia 22090
(703) 471-0800

Electrical Engineer

High-technology firm seeks employee to create and design electronics circuitry using state-of-the-art techniques and analog digital electronics; BSEE degree and courses in microprocessor 8085 and 8086 required. Salary $24,700 per year.

Contact Nancy Thompson, Control No. 2-119, at Minnesota Dept. of Economic Security, 309 2nd Ave. So., Mpls., MN 55401.

MARKETING PROFESSIONAL

Worldwide distributor and manufacturer of business application and application generator software is establishing new position to assist in developing and implementing new corporate marketing activities in dealer support programs, marketing seminars, product collaterals, advertising and public relations. We welcome letter of introduction with business and education experience resume from professional desiring to work in dynamic 'we' company in the great Pacific Northwest.

TOM SOFTWARE
P.O. Box 88888
Seattle, WA 98166

SR. DATA BASE ANALYST TO $46,000

Major, prestigious Medical Center in desirable Southern California location seeks Sr. DBA. Database design, use of IMS utilities, and solid knowledge of DL/1 or IMS DB. Superior benefits, including 3 weeks vacation first year.

WESTERN HEALTH RESOURCES
P.O. BOX 48819
LOS ANGELES, CA. 90048

DATA PROCESSING SUPERVISOR

$2276-2700/month

Major course work in computer science with a four year degree and four years progressively responsible experience, or two years college and six years experience. Desired background should include experience with: VAX/VMS or similar, distributed data processing, and local government operations/financial systems. Send resume to City of Springfield, Personnel, 225 N. 5th St., Springfield, OR 97477. Closes Sept. 30, 1982

AA/EEO Employer

TECH GROUP NORTH EAST

We are staffing up a Technical Group in a dual 3033 shop in the Northeast. Our client's shop is in need of MVS Systems Programmers and IMS DBA's to become active in the installation of a new 3081. To qualify you need IV yrs. + MVS SP work with knowledge of tuning, planning, and systems Gen's. For the IMS slots you need II yrs. + IMS design, tuning, and testing experience. Great benefits and pay. For further information contact:

George Bostick
Lyman Personnel
3100 Timmons, Suite 300
Houston, TX 77027
(713) 627-1110

PROGRAMMER

Full time and permanent. Completion of a two-year college program. Requires 1-3 years of full time programming experience, preferably using COBOL. Preferred experience in data communications and/or a data base management system. Salary: $1496 (Level I) $1735 (Level II). Final filing date 10-4-82 at 5 p.m. Contact **Sierra College Personnel Department, 5000 Rocklin Road, Rocklin CA 95677 or phone (916) 624-3333 Ext. 302.** EOE

MVS SYSTEMS PROGRAMMERS MAJOR OIL COMPANY-SOUTHWEST TO 45K PLUS HOME PURCHASE

Division of major oil company has two openings for Systems Programmers in a metropolitan sunbelt location. Outstanding benefits and full relocation including home purchase and mortgage differential.

I. Operating Systems Type
Requires MVS/JES2, SMP, experience in a TSO environment, Assembler

II. Communications Systems Type
Requires MVS/JES2 or 3, VTAM, SNA and associated technologies, experience in a TSO environment, Assembler

Both positions require a minimum of a Bachelor's Degree. If you are degreed and interested in talking further, call **Ken Levinson, (305) 757-6666.**

LEAD ANALYST

Participate in systems analysis for user functions. Includes analyzing current procedures to custom-tailor systems for user needs.

Requires 5 years systems experience. IBM mainframe experience, knowledge of COBOL and proficiency in OS JCL, UTILITIES required.

Salary $34,000 per year. Five day week, 35 hours (8:45 a.m. to 4:30 p.m.). Apply to:

THE HOME INSURANCE COMPANY
59 Maiden Lane
New York, NY 10038
(212) 530-6474
Equal Opportunity Employer

HIRING?

More computer people read Computerworld than any other newspaper in the United States - more than half a million computer people every week. And, among our 332,000 readers at user organizations about half claim to look at recruitment ads at least every other week (only a small percentage say they never look at recruitment ads). No wonder Computerworld carries more recruitment ads for computer people than any other publication.

Classified Advertising
Computerworld
P.O. Box 880
Framingham, MA 01701
(617)879-0700 800-343-6474

position announcements | position announcements | position announcements | position announcements | position announcements

Product Planning Managers

Texas Instruments has high visibility product planning manager positions open at its Northwest Houston facility.

You will have responsibility for determining basic strategic thrusts and future products in one of two areas: advanced computer terminals or computer-related communication products. Requires assessing and segmenting future markets, generating functional product descriptions, and doing detailed investment analyses. Prefer MBA with a technical undergraduate degree.

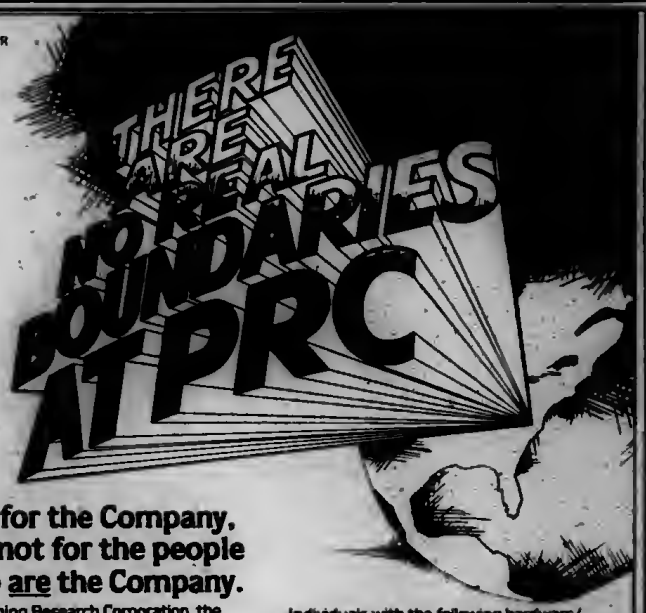
If you have five years' directly-related experience in the computer or communications industry, we want to talk to you.

Send your resume in confidence to:
Staffing Manager/P.O. Box 1444,
M.S. 7814/Houston, TX 77001.

TEXAS INSTRUMENTS

An Equal Opportunity Employer M/F

COMPUTER



Not for the Company, and not for the people who are the Company.

At Planning Research Corporation, the assault on next-generation technologies is taking place across an unusually broad spectrum of government, military and commercial programs which embody computer-based systems of every description.

The range of activities extends from the near-academic environment of inquiry found in our R&D division, where interdisciplinary specialists from widely diverse subject areas join forces to penetrate the boundaries of information science... to the gritty reality of development, installation and test of some of the most sophisticated, ruggedized tactical command and control and intelligence systems of the 80's and 90's.

Between the two, you will find virtually every activity, every skill level (from junior to senior), and every type of project represented, including network engineering, artificial intelligence, computer graphics, digital communications, C³I, advanced mini and micro computer-based systems, as well as large mainframes and data processing projects of major importance.

Individuals with the following hardware/software experience are in great demand at our headquarters facility in McLean, Virginia and other DC metro locations, and at PRC offices and sites in Hawaii, Charlottesville, the Tidewater area of Virginia, Jacksonville, Dayton, Denver, Omaha, San Antonio, and Ft. Monmouth, New Jersey. (Overseas assignments are also available.)

PDP-11/VAX, IBM, UNIVAC, DATA GENERAL, BURROUGHS, HEWLITT PACKARD, HONEYWELL

ADA, ADABAS, ASSEMBLY, CICS, COBOL, DBMS, DMS-11, FORTRAN, GCOS, GMAP, IDMS, IDS, IMS, JCL, JES 2, MACRO-11, MVS, PASCAL, PL-1, RSX, SARP, SYSTEM 2000, TCAM, TSO/SPF, VTAM

To make the one point contact for this entire environment, send your resume in confidence to Manager of Staffing, Room 130.S.

prc

Planning Research Corporation
1500 Planning Research Drive McLean, VA 22102

An Equal Opportunity Employer

ADP

The computing company

ADP is the world's leading computing services company. We maintain our industry lead by our commitment to providing computing solutions to the business needs of our diverse client base.

Systems Planner

A position is open for a Senior Systems Consultant to analyze our data processing installations and to develop comprehensive systems strategies based on existing and future business needs.

To qualify, you must have 8-10 years of broad hardware and software systems experience as an MIS consultant, advisory systems engineer or a sales executive with a strong technical background along with a degree in the Physical Sciences/Engineering. An MBA in Finance or Operations Research would be highly desirable.

Based at our new Corporate Headquarters building in Roseland, the position will afford you the opportunity for 25% national travel.

This is an excellent opportunity to share the growth potential of an expanding area of the country's fastest growing industry. Both salary and benefits are what you would expect from a company of our stature.

Please send resume with salary history to Pauline Higgins, Automatic Data Processing/0920CW, 675 Franklin Avenue, Nutley, NJ 07110.

An equal opportunity employer M/F

SYSTEMS PROGRAMMERS
$35K to $60K
Programmers/Analysts

Familiarity with any of the following:

- PL/M, PL/Z, PASCAL, UNIX/C or CP/M operating systems. 2-8 yrs. exp. Degreed.
- Install & maintain UNIX, DEC & 3rd party software. Analyze & improve VAX performance.
- Mathematical modeling. Software development.
- Mini/Micros, Real Time controls
- Software Dev'lt. Exp. in applications dev'lt utilizing UNIX/C.
- Robotics & process machine control
- Write software graphic packages

This is a partial list of more than 1000 current openings we have listed with us. Fees & relocation expenses company paid. Call/resumes.

J. Rogers (609) 771-8382
JANE ROGERS ASSOC.
2000 Princeton Pike
Lawrenceville, N.J. 08648

PHILADELPHIA

SOFTWARE SYSTEMS PROGRAMMER TO 30K

Growth Jersey Insurance Firm LGE SCALE IBM. OS/MVS INTERNALS Maintenance I/O GENS/SYS GENS/SMP. SYS PERFORMANCE, EVALUATION, SAS, VSI, or BAL + Outstanding benefits. Relocation paid. IMMED INTV.

ROBERT HALF
OF PHILADELPHIA, INC.
1500 Market St. Suite 700
Philadelphia PA 19103
(215) 563-4200

IMS PROFESSIONALS

Rochester, New York

Computer Sciences Coporation, the world's largest information services company, is currently seeking several hands-on consultants for our Rochester, NY office. We are developing large scale business sytems using IMS DB/DC database software on an IBM 370/3033 under OS/MVS, COBOL, PL-1, TSO/SPF.

The successful ccandidates for these full time positions should have a minimum of 5 years experience in the analysis, design and implementation of IMS based business sytems. Must have good user contact skills to consult with our clients' personnel in developing an integrated database environment.

CSC offers n very competitive salary, along with a wide range of company benefits including relocation assistance. If you wish to learn more about these opportunities, please call JoAnne Fink TOLL FREE at 800-643-7194, or mail her your resume with complete salary history. Agencies need not reply.

CSC

COMMERCIAL DIVISION
650 N. Sepulveda Blvd.,
El Segundo, CA 90245

An Equal Opportunity Employer M/F/H

position announcements | position announcements | position announcements | position announcements | position announcements

Your Ultimate Choice

OIL INDUSTRY EDP PROFESSIONALS LIKE TO DOUBLE YOUR INCOME?

Salary area $50,000+

Our client, an international energy giant, will soon be holding interviews that will enable qualified EDP professionals to almost double their current income and at the same time work in the most advanced EDP center outside the U.S.A.

We are looking for individuals desiring to live overseas with experience in the following areas:

SYSTEMS ANALYST

Experience in an IBM environment with skills in FORTRAN, PL/1 and TSO. Specific experience with petroleum engineering or reservoir simulation systems is preferred. Candidates with graphics software and graphics application development background are highly desired.

DATA MANAGEMENT ANALYSTS

Experience with design and applications development of large data management systems, preferrably petroleum engineering or oil production. Must have large scale IBM systems experience with JCL, TSO and VM/CMS familiarity.

SUPERVISOR-RESERVOIR SIMULATION

Experience in petroleum engineering or related computer technology with exposure to reservoir simulation system software. Will provide leadership and technical expertise to a large community of reservoir engineering users.

For immediate consideration, please contact Cliff Reilly at ((713) 658-9898.)

ALL FEES ASSUMED BY CLIENT COMPANIES
NEVER A CONTRACT TO SIGN

M. david lowe
PERSONNEL SERVICES

675 Houston Natural Gas Bldg.
1200 Travis
(713) 658-9898
Houston, Texas 77002

SAN FRANCISCO BAY AREA

Our clients are currently seeking:

SYSTEMS PROGRAMMERS — IBM DOS/VS E, MVS and VM

DBA's in IMS and IDMS.

SR. CONSULTANT — RACF — Resource Access Control Facility

SR. ANALYSTS — IBM/IMS — Banking and Insurance

Send your resume or call us collect.

Leslie Strickland Hal Biggs
2 Palo Alto Sq. #212 675 N. 1st St. #609
Palo Alto, CA 94304 San Jose, CA 95112
(415) 493-8700 (408) 293-9040

Dick Kerr
2775 Mitchell Drive
Walnut Creek CA 94598
(415) 930-8180

Jerry Anderson Bob Couch
111 Pine Street, 15th Floor
San Francisco, CA 94111
(415) 434-1900

ROBERT HALF
OF CALIFORNIA, INC.

EDP Professionals Insurance Industry to $42K

We have been retained by some of the largest INS co's in the world to recruit **Lead Analysts, Systems Consultants, Project Leaders,** etc with knlg of the INS industry and project life cycle concepts. Familiarity w/rge IBM configs, COBOL, TSO, CICS, IMS, helpful. Complete relo pkg incl MORT DIFF. Great bnfts, immed intv

Contact: BOB BRESSLER

McFadden
811 Church Road
Suite 214
Cherry Hill, NJ 08002
(609) 488-0500
(215) 569-3649

ADMINS PROGRAMMER

New York City Agency - Mid $20's
3 years programming experience
2 years admins - mandatory
RSX 11M - plus preferred
Benefits plus 4 weeks vacation
Send resume to
NYC Department of Correction
Personnel Division
377 Broadway
8th Floor
New York City, NY 10013
EOE Employer

DATA PROCESSING EXECUTIVE-MANAGER

Diversified Los Angeles-Based Multi-Company Financial Institution requires highest caliber person for senior management position. Must possess exemplary skills in both verbal and written communication and be sophisticated in all of the following operational, data processing related areas:

- Budgeting
- Evaluation of existing hardware/software systems with verbal and written reports to executive commitee.
- Evaluation of technological advances with verbal and written recommendations to executive committee as to options.
- Implement preliminary negotiations for aquisition of hardware/software enhancements.
- Recruit and manage staff.

Submit resume and salary requirements to:
Reply to CW-A3335
Computerworld
Box 880
Framingham, MA 01701

SUNBELT

DATA PROCESSING

If you have 2 yrs. experience as a programmer P.A. S.A. S. Prog. or data base analyst - call today! Tell one of our 6 D.P. professionals what you want and where - if we don't have it - we'll find it!

"The D.P. Pros"
Personnel Placement, Inc.
537-D Huffman Mill Rd.
Burlington, N.C. 27215
919-584-5501

SUNBELT SUNBELT SUNBELT

WASHINGTON, D.C.

COASTAL VIRGINIA

Strong in CAD/CAM? Develop manufacturing and Data base systems in VA. IBM or mini experience a must. $25-40K

ROBERT HALF
OF WASHINGTON, INC.

IBM SERIES/1

Senior Programmer/Analysts needed for challenging projects in NYC (Manhattan). RPS or EDL/EDX a plus. Mail resume with availability to:

Mr. J. Fox
ZYNCON CORP.
4 World Trade Center
Room 704
New York, NY 10048
Tel. (212)938-2237

DATA PROCESSING INSTRUCTOR

Westmoreland County Community College a two-year College located some 35 miles Southeast of Pittsburgh, Pa. is seeking qualified candidates for Data Processing Instructor position.

Candidates should possess a minimum of a Master's Degree in Computer Science or Information Sciences. Preferred teaching experience and/or related experience in Data Processing. Knowledge of Cobol, Basic, Fortran and RPG is required.

Salary contingent upon Educational background and related experience in accordance with Faculty Contract provisions.

Resume, along with supportive documents should be sent to the office of the Director of Personnel, W.C.C.C., Armbrust Road, Youngwood, PA 15697.

Deadline for receiving applications is October 15, 1982. W.C.C.C. is an Affirmative Action/Equal Opportunity Employer.

COMPUTERWORLD CLASSIFIEDS WORK!

- **POSITION ANNOUNCEMENTS**
- **BUY SELL SWAP**
- **SOFTWARE**
- **TIME & SERVICES**
- **SOFTWARE FOR SALE**
- **REAL ESTATE**
- **BUSINESS OPPORTUNITIES**

It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or a camera ready mechanical, stat or film negative of your ad, just call one of our ad-takers at 1-800-343-6474. They will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (telecopier service is available): note the ad size you want: and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with your insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

Ad closing is every Friday, 6 working days prior to issue date.

Rates: Open rate is 97.30 per column inch. Columns are 2" wide. Minimum ad size is 2 column inches (1 column wide by 2 inches deep), and costs $194.60 per insertion. Additional space is available in half-inch increments. Some sample sizes and costs are shown.

1 col x 4" - 389.20
2 cols x 4" - 778.40
2 cols x 5" - 973.00
2 cols x 8" - 1556.80

Discounts are available when you run more than 35 column inches of advertising in a year anywhere in Computerworld. Box Numbers are available. $10 per insertion. Ad Closing is every Friday, 8 working days prior to issue date (issues are dated Monday)

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

Boston - (617) 879-0700
New York - (201) 967-1350
Chicago - (312) 827-4433
San Francisco - (415) 421-7330
Los Angeles - (714) 556-6480

TELECOPIER SERVICE - (617) 879-0700

William J. Mills, Manager Classified Advertising

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Box 880, Framingham, MA 01701/(617) 879-0700

BUY•SELL•SWAP

DPD PERIPHERALS

3330 3410
3340 3411
3350 3420

BUY • SELL • LEASE

COMPUTER BROKERS INC.
2978 SHELBY ST.
MEMPHIS, TENNESSEE

CB

901-372-2622

GSD SYSTEMS

3 32
34 38

BUY • SELL • LEASE

ASCOM

HOW TO SAVE $30,000 PER MONTH ON A 3083 LEASE.

Lease the same 3083 that IBM leases for over $92,000 per month from Randolph—for less than $62,000 per month. That adds up to savings of $1,440,000 over a four-year lease period. If you're renting an older machine, Randolph may save you even more—and you'll get about four times the throughput in the bargain.

WHEN IS THE BEST TIME TO TALK TO RANDOLPH ABOUT LEASING A 3083?

Now—because Randolph has 3083's available for 4th quarter delivery. But it's never too late, even if you already have a machine installed. Whatever your situation, we can tailor a lease that will fit your exact needs and let you start saving money right away.

TALK TO RANDOLPH NOW.

We can solve problems like these, and more . . .

Stuck with a lease on your old machine?
We'll sublease it, and provide a new lease on a 3083.

Own a 3083 but need cash?
Sell your machine to Randolph, and we'll lease it back to you.

Machine installed on a rental basis?
We'll show you how to end the lease and install a new 3083. Any termination charges can be folded into your new Randolph 3083 lease.

LEASING COMPUTERS IS OUR ONLY BUSINESS.

At Randolph, our people have an average of 18 years in the DP industry . . . from 360's to 3081's. They know all about alternative financing to be sure, but they also know their way around a DP department and the hardware in it.

WE LEASE MORE THAN 3083's.

Whatever your needs, now is the time to talk to Randolph. We provide leases for IBM 303X, 4300 and 3081 systems and peripherals—disks, tapes—as well as 3083's.

UNIQUE FINANCIAL STABILITY.

We're an important part of one of the nation's oldest and leading financial institutions . . . The First National Bank of Boston. 18 years in computer leasing gives added assurance that Randolph will continue as the leader in the computer leasing industry . . . continue to live up to the terms and conditions of our agreements . . . provide upgrades . . . fulfill all of our commitments.

LET RANDOLPH HELP YOU SAVE $30,000 PER MONTH.

We can solve a lot of problems for you, and save you money, too. Talk to Randolph now . . . call Joseph B. Kelly, Jr., Senior Vice President, 800-243-5307.

537 Steamboat Road
Greenwich, Connecticut 06830
203 661-4200 • 800 243-5307

Randolph

A MEMBER OF COMPUTER DEALERS & LESSORS ASSOCIATION RANDOLPH COMPUTER CORPORATION A subsidiary of THE FIRST NATIONAL BANK OF BOSTON BANK OF BOSTON

PCM

Pioneer Computer Marketing
214/385-0354

BUY-SELL LEASE
- All IBM Systems
- Peripherals
- Tapes
- Disks

SERIES/1
- Systems
- Features
- Peripherals

SYSTEM 34
- CPU
- Peripherals
- Upgrades

PIONEER COMPUTER MARKETING
Suite 680 4835 LBJ Frwy
Dallas, Texas 75234
214/385-0354

BUY...SELL...LEASE
IBM SYSTEM/34
Save up to 40%
F37 E35
D34 C23
5251 CRT's
5256; 5211
Fraxions EQUIPMENT CORPORATION
(212)279-0069

DATA GENERAL

Hanson Data Systems

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

Peripheral Revision.

Adding Digital's factory-refurbished peripherals to your present computers makes very good sense. Because our peripherals are an economical way to expand. And a very, very reliable one.

Every one of them has been debugged here at the factory. Tested and retested. Modernized to Digital's latest engineering standards. And has the same 90-day warranty as on our new equipment. Backed by our worldwide service network.

There's just no way you can lose. No matter how you look at it.

Call your local Digital sales office or 1-800-258-1728.

In New Hampshire, (603) 884-6960.
Digital Equipment Corporation,
Traditional Products, 16 Hampshire Drive, Hudson, NH 03051.

digital

★ ★ ★ ★ **DEC** ★ ★ ★ ★

BUY—SELL—LEASE—TRADE—CONSIGN

— CPU'S —

11/23 11/34A 11/44 11/45 11/70 11/750

— DISCS —

RK05 RL01 RL02 RM02 RM03
RP04 RP05 RP06 RK06 RK07

— TAPES —

TM11EA TE16 TWE16 TJU45 TU45

— MEMORY —

11/34	11/44	11/45	11/70	VAX
MS11JP	MS11MB	MM11UP	MJ11BE	MS750
MS11LB		MF11UP	MK11BE	MS780
MS11LD			MK11CE	

— MISC. —

FP11A	FP11B	FP11C	FP11E	FP780
DMC11AL	DMC11AR	DMC11MD	DMC11DA	DMR11
DJ11AA	DJ11AC	DH11AA	DH11AD	DQ11
DV11	DZ11	DU11	DL11	DR11
RH780	RH70	RH11	KK11	RK611

THOUSANDS OF MODULES IN STOCK
SPARE FOR ANY DEC UNIT
CALL FOR QUOTE

CALIFORNIA COMPLEXE EXCHANGE

800-854-7224

6980 Aragon Circle Suite 5 • Buena Park CA 90620

(In Calif.)714-522-1870 TWX:910-596-1499

MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by the CDPA, 508 Robert E. Lee Building, Jackson, MS 39201 for the following data processing equipment and services:

Request for Proposal Number 773, due Thursday, October 7, 1982, 3:30 P.M., for the acquisition of a memory upgrade of an IBM System 34 from 128K to 256K and expansion of Diskette Reader/Writer to magazine.

Request for Proposal Number 774, due Thursday, October 7, 1982, 3:30 P.M., for the acquisition of two (2) Dual Data Station Diskette Entry devices equivalent to IBM 5280's or 3742's.

Request for Proposal Number 775, due Thursday, October 14, 1982, 3:30 P.M., for the acquisition of a computer-assisted transcription system for the Mississippi Workman's Compensation Commission.

Request for Proposal Number 776, due Monday, October 11, 1982, 3:30 P.M., for the acquisition of three IBM 3420 tape drives and controller or their functional equivalents for use on a university's IBM 370/158.

Request for Proposal Number 777, due Monday, October 11, 1982, 3:30 P.M., for the acquisition of four CDC 33302/11 disk drives and a controller or their functional equivalents for use on a university's IBM 370/158.

Request for Proposal Number 778, due Monday, October 11, 1982, 3:30 P.M., for the acquisition of the IBM MPSX software or its equivalent for installation in a MVS/SP1.3/JES2 environment.

Request for Proposal Number 779, due Tuesday, October 26, 1982, 3:30 P.M., for the services of a consulting firm to do the detail design and implementation of an inventory control and client data tracking system to run at the Mississippi State Computer Center.

Request for Proposal Number 780, due Tuesday, October 12, 1982, 3:30 P.M., to acquire an on-line fiscal budgetary accounting system to run on a Burroughs B-1855 computer system.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

Becky Adams or Elaine Kruesse,
State Central Data Processing Authority
601/961-4300

BUY ■ SELL ■ LEASE
PURCHASE LEASEBACK

SERIES / 1
SYSTEM / 23, 32, 34, 38
SYSTEM 360 / 370
4331 3031 3033
4341 3032 3081
IBM Peripherals

FRONTIER

For Sale
Complete NCR System

CPU 8450 (256K)
Tape Drive 634
(3) Disk Drives 658 (200MB)
Printer 647
Add'l VHS Trunk, IDC Control Mod, Under Maintenance Contract, Available Now - $82,000

Call D. Felice
(215) 641-2300

NEW • • • USED
TERMINALS, CRT's, PRINTERS
DEALER IN
ADDS • HAZELTINE • TELEVIDEO • DIABLO • NEC • QUME • DEC
TEXAS INSTRUMENTS
SYSTEMS & COMPONENTS SPECIALISTS FOR
DEC
TEXAS INSTRUMENTS 200, 770, 990
NORTHSTAR
• IMMEDIATE DELIVERY
• LOWEST PRICES
• NATIONWIDE SERVICE
THE COMPUTER BANK
Huntington Station, New York 11746
(516) 549-5500
BUY • • • BROKER

NEED DASD?
WITH DELIVERY OF OUR IBM 3380's, MCPIKE, INC. HAS 3340's, 3344's, 3350's, and 3348 DATA MODULES FOR SALE. ALL EQUIP ON IBM MAINTENANCE. FOR MORE INFORMATION CONTACT – PHIL HARRIS AT MCPIKE, INC. 816-231-1355

ANY TERM LEASE
3033S8
AVAILABLE NOW
CALL
CHARLIE ALBRIGHT
(212) 742-2241

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

BUY
SELL • LEASE

DISK
3340 • 3344
3350 • 3380

TAPE
3411 • 3410
3420

Call Bob Ford
or Nelson Johnson

S/38
S/34
S/3
SERIES/1

Call Gayle Drotar
Roger Odom
Ken Winzen
John Bottom

370 Systems

4341 • 4331
3031 • 3032
3033 • 3081

Call Jack Harvey
or Larry Nesbit

NEED TO REDUCE EXPENSES?

ECONOCOM'S PURCHASE-LEASEBACK PROGRAM CAN PRODUCE IMMEDIATE SAVINGS ON YOUR PRESENT EQUIPMENT—CALL FOR DETAILS.

ECONOCOM
1755 Lynnfield Road
P.O. Box 17825
Memphis, Tennessee 38117
901-767-9130
CDLA

COMDISCO

Your First Choice ✓
In The Second Market

IBM PROCESSORS	IBM PERIPHERALS
3081	3880-1/3830-2
3083	3350/70/75
3033	3880-2/3880-3
3032	3380 A4/AA4
3031	3380 B4
4341	3330/40/44
All 370's	3803-1 2
	3420's
Amdahl	3705/04
Memory Channe	327X

We Ca Put It Toge

A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

SAVE 10 TO 24% OFF MLC

SPECIAL LEASE RATES ON NEW SYSTEM/38s

- MODEL 5 & MODEL 7 ONLY
- OPTION TO RENEW—MO./MO.
- OPTION TO PURCHASE (FIXED)
- SYSTEM MUST BE INSTALLED NOT LATER THAN 8-31-82

CALL FOR DETAILS:
901-767-9130

ECONOCOM
P.O. Box 17825 / 1755 Lynnfield Road
Memphis, Tennessee 38117-0825
CDLA

IBM For Less.

Lease Financing

- New IBM Equipment
- Purchase/Leasebacks of Installed Systems

Equipment

- IBM 4300's
- Systems 38's
- System 34's
- Peripherals

TexCom

San Antonio
512/690-9926

Please Call For A Proposal

3083
4341
4331

4341-K1 (used) will reconfigure to L1 or L2
Available 11/1/82
Sale / Lease

Tape Drives
3420
3410 8809
Immediate Delivery

Controllers
3880 3830
3803
Immediate Delivery

Printers
3203 3211
1403
3287 3289
Immediate Delivery

DASD
3380 3375 3370
3350 3344 3340
3330 3310
Immediate Delivery

Control Units
3274 3272
3276 3271
Immediate Delivery

Display Stations
3278 3277
Immediate Delivery

We Buy, Sell & Lease IBM Processors and Peripheral Equipment

CDLA

Contact Bernie Gest 215 782
Computer Marketing Inc.
7704 Seminole Ave. Philadelphia PA

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

IF YOU GOT AN S/38 IN '82, CALL US BY 10/31.

In computer financing, it pays to go by the numbers. Because if the numbers are right, you can save a bundle.

That's especially true if you've ordered or installed a new IBM* System 38 (Model 5 or 7) in 1982. By shifting your lease to Computer Options, you can benefit from a substantially lower monthly lease rate than you'll get from IBM Credit Corp. And if you wish, *you can keep the investment tax credit and depreciation write-off for yourself*... something IBM won't let you do.

To find out more, call us. But remember, the new lease on your installed system must be signed by October 31—or your chance to save will be 86ed.

Call toll-free

1-800-328-5718

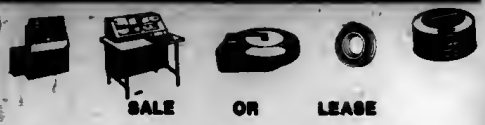
(in Minnesota, (612) 544-8660)

COI Computer Options, Inc.
"the best option"
1660 South Highway 100
Minneapolis, Minnesota 55416

©1982 Computer Options, Inc. *IBM is a registered trademark of International Business Machines

IBM UNIT RECORD EQUIPMENT

DISK PACKS DATA MODULES MAG TAPE DISKETTES



SALE OR LEASE

026	084	129	548	2316
029	085	514	555	3336(1)
082	087	519	3742	3336(11)
083	088	526	360/20	3340(70) Cartridges

Highest prices paid for used packs & machines.

Thomas Computer Corporation
600 North McClurg Court, Chicago, IL 60611
800-621-3808 IL 312-944-1401

Authorized Distributor
Memorex
CDC
3M
BASF

DEC CRTs

- **VT100-AA** $ 1,275.
- **VT18X** Personal Computing Option 935.
- **VT640** Retrographics Option 1,495
- **VT101-AA** w/EIA 995
- **VT102-AA** w/AVO, printer port 1,315
- **VT131-AA** w/AVO, printer port, editing 1,410

Printers

- **DEC LA36-AA** w/EIA $ 495.
- **DEC LA36** w/1200 baud option 995.
- **Teletype 43AAA** KSR w/EIA 975.

Off-the-Shelf delivery

New—in factory cartons

Warranty Included

Call 800-638-6712 Ext. 300

M/A-COM

M/A-COM Alanthus Data, Inc.
6011 Executive Boulevard
Rockville, Maryland 20852
301/770-1150

FOR SALE OR LEASE - IBM S/3

- **Available for Immediate Delivery**
- 3277-002 w/4631 CRT
- 3277-001 w/4632 Console
- 3340-A02 D.A.S.F.
- 3411-3 w/7003, and 3211 Tape Drive
- 3741-001 w/4002, 6123 & 3265
- 5421-001 Printer Control

Call Barry Tessler
PEARL EQUIPMENT COMPANY, INC.
P.O. BOX 24686 • 4717 CENTENNIAL BLVD.
NASHVILLE, TENNESSEE 37202
(615) 383-8703

ALSO:
System/34
System/38

System/38s at significant Discounts

- New from IBM
- Full IBM warranty
- Investment tax credit qualified
- Short-term delivery
- Lease and financing terms available

Call now (203) 222-0170

Datalease Corporation • P.O. Box 467, Westport, CT 06881

DATALEASE

DEC&COMPATIBLE

Hanson Data Systems

Take the shuffle out of the search.

Subscribe to the Computer-world Index.

[For details, call or write our Circulation Department]

COMPUTERWORLD

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

CMI

AMERICA'S LEADING SPECIALIST SERVING THE USED MARKET

3081/3083 Lease Financing Available For Your System or Ours Any Term

NEW 3033 Memory & Features BELOW List Price

NEW 3033 BELOW List Price ITC Qualified

NEW 3033 Upgrade S-N or N-U BELOW List Price

3042 Attached Processors Lease or Sale

SYSTEM 3 Models 12 and 15 Dennis Pennington

AMDAHL V8 and V6II Available for Sale or Lease

3168/3158 Upgrades Memory/Channels/Features

Wanted 4341-M2 Call Now

Wanted 4341-L01 Call Now

Communications IBM 3705 IBM 3704 Bill Maluto

SYSTEM 34 SYSTEM 32 Dennis Pennington

3270

3350 3340 3375 3830 3370 3830 3330 3380 Buy/Sell/Lease Pat Callahan Mary Drangin

2914 3203 3800 3805/3825 3211/3811 Mary Drangin 3803/3830 Immediate Delivery Tim Ryan

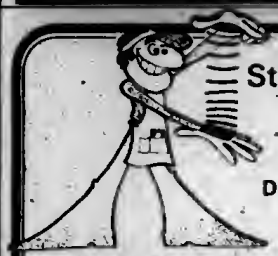
MARKETING
California (408) 773 16
New Jersey (609) 645-7282
Tennessee (615) 449-6633
Texas (214) 385-0806
Montreal, Quebec (514) 871-1121
Paris, France Telex: 613910 CMI FR
Windsor, Ontario (519) 258-8910

CMI CORPORATION
TWX/TELEX

CMI FINANCIAL SERVICES, INC.
755 W. Big Beaver Troy, Mich 48 83
(313) 362-1000

(313) 362-1000

A Torchmark



Stack your DEC with WEX

DEC specialists with exciting deals

PDP11/70	CPU, 1MB CORE, DUAL-DA	$30,900
P300	300 LPM PRINTER BY PRINTRONIX	$4,895
P600	600 LPM PRINTER BY PRINTRONIX	$6,895
MRF11-AA	LSI 11/23 CPU PCB & MMU (MB106)	$1,300
TS11-AA	1600 BPI TAPE SYS. RACK MNTBLE	$10,000
0100	75 IPS TAPE DRIVE BY KENNEDY	$4,795
9000	45 IPS TAPE DRIVE BY KENNEDY	$3,990
CDC R762	80 MB DISK DRIVE BY CDC	$6,200
DP00-AA	170 MB REMOVE-RACK DRIVE (USED)	$13,805
QJ013-CD	RT11 V4.0 SV RL01	$1,100

WEX West Coast Computer Exchange Inc.
11309 Folsom Blvd. Rancho Cordova CA 95670
TWX # 910-367-3707
(916) 635 - 9340

BUY SELL

IBM

SERIES/1 5110-5120 S/32 S/34 S/38 S/3

ALL MODELS SYSTEMS AND PERIPHERALS AVAILABLE NOW!

(408)425-7333

SOURCE DATA PRODUCTS INC

DEC

BUY • SELL • LEASE • UPGRADE

RM02-AA $16750 BOTH NEW RM05-AA $22500

CPU'S
11/34A-XX (new & used)
11X44-CA (new)
11/70 (used)
11/780 (new)

COMMUNICATIONS
DH11-AD (new & used)
DZ11-E (new)
DLV11-W (new)

DISK DRIVES
RM03-AA (new & used)
RK711-EA/PA (new)
RK07-EA (new)
RP06-AA (used)
RL211-AK (new)
RM05-AA (new)
RK05F-FA (used)
RM02-AA (new)
RXV21-BA (new)

MEMORY AND MISCELLANEOUS
MS11-LB (new & used)
MS11-JP (used)
TEU78-AB (new)
FP11-A (new & used)
BA11-KE (new)
FP11-C (used)
DD11-DK (new & used)

All equipment fully warranteed and eligible for DEC maintenance

BROOKVALE ASSOCIATES
40 Orville Drive, Bohemia, New York 11716
(800) 645-1167
In New York, call:
(516) 567-7777

WANTED!

SYSTEM/32 SYSTEM/34

If you have a System/32 or System/34 to sell, we would like to buy it. Since we are dealing on behalf of already committed buyers, we can afford to pay top dollar for your computer.

CONTACT
Mr. William Bell
National Medical Computer Services, Inc.
7578 Trade Street
San Diego Ca. 92121
(714) 566-9920

DATA GENERAL SPECIALISTS FOR Surplus New & Used Equipment & Systems with full depot repair facilities.
CALL US
WE TAKE THE TIME.
- WE CARE.-
JM Associates
801 W. Chapel Avenue
Cherry Hill, NJ 08002
609-663-1115

XERXES COMPUTER SALES

S/34 SERIES 1 5110
S/38 S/3 S/32 S/23
We Buy, Sell and Lease All IBM Products
800-328-3884 612-339-3042
1914 Harmon Pl., Ste. 210 Minneapolis, MN 55403

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

1-800-328-7000

In Minnesota (612) 894-4020

Your **DEC** Hot Line to the lowest prices nationwide!

MSI MIDWEST SYSTEMS, INC.
12117 Riverwood Drive, Burnsville, Minnesota 55337

DEC

Discs & Tapes		
RK06/EA		1,500
RL01/AK		Call
RL02/AK	(unused)	2,300
RM03/AD	(unused)	11,000
RM80/AA	(unused)	15,900
RP06/S	(unused)	18,000
RP06/C		3,500
TU45/KE	(slave)	Call
TU45/EC	(master)	Call
TU58/VA		900
TE16's	(unused)	Call
TU70/B	(50Hz)	6500

Options Peripherals		
BA11/KE		2,050
DH11/AE	(new)	Call
DH11/AD	(new)	Call
DL11/W	(new)	550
DMC11's		Call
DR11C		475
DUP11/DA		999
FP11/A	(new)	1,495
KX11/A	(new)	1,795
KMC11/A		1,900
KT11/D		990

Terminals		
LA120's	(new & used)	Call
LA36's	(new)	Call
LP11/WA	(new)	Call

CPU's: 11/34 11/35 11/40 11/45 11/70's

Specialists in Digital Engineering

BAI Carl R. Boehme Associates, Inc.
2378-A Walsh Ave.
Santa Clara, California 95051
408-727-2666 Telex 172-337

DEC DEALS!

CURRENT SPECIAL
1134A-XE (new)
$6,950.

RX44-CA	$20,950			RK07-PA	$ 6,175
BC04S-16	$ 450			RK711-PA	$ 9,175
DD11-DK	$ 600	KY11-LS	$ 495	RL01-AK	$ 1,250
DMC11-MD	$ 1,100	LA30-DA	$ 750	RL11-AK	$2,600
DZ11-S	$ 2,750	LA120-SA	$ 1,875	RL02K-DC	$ 195
FP11-A	$ 1,750	LA120-DA	$ 1,950	RM03-AA	$ 7,450
FP11-F	$ 2,100	MK11-CE	$ 2,450	RM03-BA	$ 8,950
H960-CA	$ 950	MS11-LS	$ 750	RM03-C	$ 1,775
H9602	$ 1,295	MS11-MS	$ 1,795	RX211-BA	$ 1,750
H9642	$ 750			VT100-AA	$ 1,375

READY FOR IMMEDIATE DELIVERY

We want to BUY equipment NOW! Please call about your available equipment.

The "NYCE" source... the best source.

new york computer exchange, inc.
130 gazza boulevard
farmingdale, ny 11735
(516) 752-8666 (212) 843-5551

Need to Upgrade? Call Us Second

(Right after you've talked to IBM!)

JUDY, MARILYN AND DEBBIE WILL SAVE YOU MONEY

Call 214-258-0541 Today!

System/32s, 34s, 38s, 4300s, 3270s, 370s, all peripherals and I/O... much more!

MCC METROPLEX COMPUTER COMPANY, INC.
320 Decker Drive • Suite 180 • Irving, TX 75062 TWX 910-860-9285

NEW! NEW! NEW!

"Intelligent" 3278 Replacements

Let Us Show You How

IBM - MINI - MICROS
All Your Computer Needs
Lease/Buy/Sell

dc dearborn

SALE OR LEASE

30 DAY DELIVERY
3380-AA4
3380-B4
3880-3

AVAILABLE NOW
3880-D11

IMMEDIATE DELIVERY
3350
3370
3375

Contact Your Local Office

Atlanta	404—256-5956	Florida	305—428-3177
Boston	617—542-4005	Ft. Worth	817—534-1774
Chicago	312—698-3000	Michigan	313—644-1500
Connecticut	203—655-1211	New Jersey	201—568-9666
Dallas	214—258-6444	San Francisco	415—944-1111
	Washington, D.C.	301—441-1000	

COMDISCO

LOW PRICE

System/3-15D25

3277-1	3741-1
3340-1	3344-B2
1403-N1	5421-1

3277-1, 4631 (Qty. 11)
Financing at 12%

COI 800-328-5718
612-544-8660

FOR SALE
IBM
SYSTEM/3 MODEL 15D-24

1403-002 Printer and Control Unit
3741-002 Data Station with I/O Adapter
3340 BASF Data Modules
2400 Baud Racal-Milgo Modems
Available October 1, 1982
Call (312)920-7920

FOR SALE
MICRODATA

96KB Memory • All 16K Boards
(2) 10MB Disk Drives, 800BPI Tape
(2) 120CPS Printers
(4) Open Ports • 3.2B Operating System
Call Information Solutions Inc.
George Tillman
(303) 694-9180
or S & A Distributors
Steve Fey
(303) 321-4650

FOR SALE
BURROUGHS B1855

W/524K
130MB Disk-206
(4) Input Terminals-TD830
1100 LPM Printer-9247
PowerMite Isolation Trnsf. 20KVA Input
Will Consider Selling Separately
Contact: Gary Bonner
Santa Ana, CA
(714) 540-2555

FOR SALE BY OWNER
RCA 70/45 SPECTRA

Processor I (131K)
(2) Disk & (6) Tape Drives
Printer & Card Reader
Available 10/31/82
Lock, Stock and Barrel
Call: Sam Booher
(413)786-7600
Farm Credit Banks
67 Hunt St.
Agawam, MA 01001

MV8000 ECLIPSE SYSTEM

Includes:
2 MB MOS MEMORY
6161 147MB Disk
6160 74MB Disk
6021 800/1600 Tape
4340 8-Line Async
4342 16-Line Async
4356 Matrix Printer
6130 D409 Terminals
Loaded With Software.
Will Configure As Needed.
Available For Sale Immediately
International Computing Systems
P.O. Box 343, Hopkins, MN 55343
(612)641-2941

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

617-372-8536

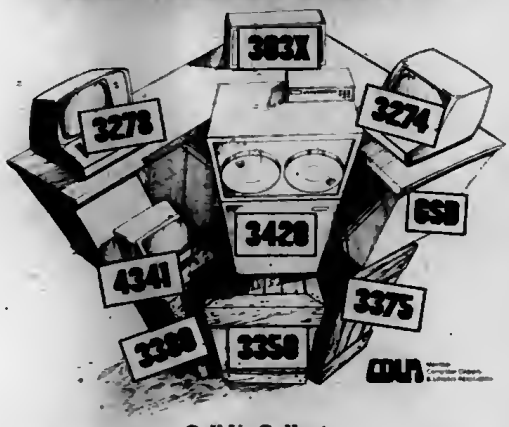
Alternative
wang
Specialists
WORD PROCESSORS OIS COMPUTER SYSTEMS

SYSTEMS & PERIPHERALS
- BOUGHT
- SOLD
- SERVICE
- UPGRADES
- TRADE-INS
- LEASES

and we're faster!!!

CFR
CFR ASSOCIATES, INC.
18 GRANITE STREET
HAVERHILL, MA 01830

THE HARDWAREHOUSE IS HARD TO BEAT FOR PRICE AND AVAILABILITY.



Call Us Collect

UNITED STATES	
Boston: Eastern Regional Headquarters	**(617) 272-8119**
Washington, D.C.	(703) 521-0300
New York	(212) 832-2622
Philadelphia	(215) 293-0546
Syracuse	(315) 682-6120
Austin: Southern Regional Headquarters	**(512) 451-0121**
Atlanta	(404) 768-6535
Dallas	(214) 233-1818
Houston	(713) 629-4440
Chicago: Central Regional Headquarters	**(312) 789-9100**
Pittsburgh	(412) 922-8920
Detroit	(313) 995-8717
San Francisco: Western Regional Headquarters	**(415) 283-8980**
Los Angeles	(213) 670-7894
Denver	(303) 534-7436
San Diego	(714) 231-2361
Seattle	(206) 447-1682
Phoenix	(602) 248-5978
Portland	(503) 228-7033
Salt Lake City	(801) 298-4281
CANADA: Toronto	**(416) 366-1513**
Montreal	(514) 281-1925

BROKER/DEALER SALES AND LEASING
Phoenix: (602) 248-6848

168, 383X, 155, 158	
Memory	**Ted Arbuckle**
Peripherals	**Sandy Mitchell**
Communications & Terminals	**Dave Revere**
GSD & 360	**George Beck**
Leverage Leasing	**Phil Iversen or Wayne L. Smith**

GREYHOUND COMPUTER CORPORATION
Greyhound Tower Phoenix, Arizona 85077 800 528-6113

DAO
BUYING - SELLING LEASING IBM EQUIPMENT SINCE 1965

Over 120 years of staff experience to assist you in fulfilling your equipment needs.

DATA AUTOMATION COMPANY, INC.
4050 CASH ROAD, P.O. BOX 67922
DALLAS, TEXAS 75347
214-637-6570

Charter Member Computer Dealers & Leasing Association

DEC
SYSTEMS & COMPONENTS
C.D. SMITH & ASSOCIATES, INC.
12605 E. Freeway, Suite 318
Houston, TX 77015
(713) 578-8464
TELEX 76-2547 CDSMITH HOU

LOWEST PRICES IN THE WORLD ON MAGNETIC MEDIA

8" SSSD, Part #3062, $1.95
8" SSDD, Part #3090, $2.25
8" DSDD, Part #3102, $2.75
5 1/4" SSDD, Part #3481, $2.00
5 1/4" DSDD, Part #3491, $2.90

The following abbreviations stand for:
SSSD = Single Sided Single Density
SSDD = Single Sided Double Density
DSDD = Double Sided Double Density

Cash or Prepaid. Lifetime guarantee on all media. We have disk packs, computer tape, $ mag cards. Call for prices and to order. We carry BASF and Memorex. F.O.B. Chicago.

KMX Holding Limited
(312) 828-8420

IBM SYSTEMS
38 • 34 • 32
3/15 • 3/12
GSC GENERAL SYSTEMS CORPORATION
2328 Livernois
Troy, Michigan 48084
Phone: (313) 689-8200
JERRY ROBERTS

IBM
3270

IBM
PROCESSORS PERIPHERALS
- BUY
- SELL
- LEASE

Carlyn Computer Systems, Inc.
5203 Leesburg Pike, Suite 1204
Falls Church, Virginia 22041
Call Collect (703) 820-3754
Computer Sales & Leasing

SYSTEM 38•34•32•3
5110•5120
SERIES 1

5251	3262
5256	3287
5211	3276
3344	3741
3411	3410
3340	029/129

CCSI

DEC LSI-11 Components
Dependable service at discount prices
Domestic and Export

Mini Computer Suppliers, Inc.
25 Chatham Rd., Summit, N.J. 07901
Since 1973
(201) 277-6150 Telex 13-6476

IBM
SERIES 1 S/32 S/34 S/38
TAPE DISK PERIPHERALS
UNIT RECORD 029-129
5110-5120 3741 3742

Amerilux Computer Corporation
214-934-9151
GENE NICHOLL
14229 PROTON • DALLAS, TEXAS 75234

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

We're number 1 for Series/1

Computer Options, Inc. is the world's largest remarketer of IBM SERIES 1 mainframes and peripherals. And we're also no slouch when it comes to new hardware—with a wide array of discounted value-added hardware packages. We offer you the option of buying or leasing. And in most cases we will purchase your old system. Call us toll-free for more information.

AVAILABLE NOW FOR IMMEDIATE INSTALLATION

4955-F	4973-2
4955-E	4974-001
4959-A	4975-2L
4962-2	4969-04P
4964-001	7850's

ALSO AVAILABLE–SYSTEMS 34 & 38

Call toll-free 800-328-5718
(in Minnesota, 612-544-8660)

COMPUTER OPTIONS, INC.
"the best option"
1660 South Highway 100
Minneapolis, MN 55416

3270's

AVAILABLE FOR SALE OR LEASE

3274 CONTROL UNITS
3276 CONTROL UNIT DISPLAY STATIONS
3278 DISPLAY STATIONS
3279 COLOR DISPLAY STATIONS
3287 PRINTERS
3268 PRINTERS

We Specialize in Quick Delivery

NF COMPUTER SALES & LEASING CORP.

BUY SELL LEASE

3741/3742 S/34

800-422-1004
IN TENNESSEE CALL (615) 859-3872

Tennecom MARKETING INCORPORATED
P.O. BOX 348 GOODLETTSVILLE (NASHVILLE) TENNESSEE 37072

SYSTEMS • PERIPHERALS • PARTS

DG DEC

Phil Thomas 305-392-2006
Bryan Eustace 305-392-2005
Jennifer Eustace 305-392-2007
TELEX 568-670

BUY-SELL-TRADE-LEASE

THOMAS BUSINESS SYSTEMS, INC.

INTERSTATE COMPUTER EXCHANGE

IBM

BUY•SELL•UPGRADE

S/34 S 38 • S 32 • S 23 • 5110 5120
SERIES 1 • ALL IBM EQUIPMENT

• Guaranteed IBM Maintenance
• 25 to 35% Off IBM List

WANTED

AVAILABLE NOW: S/34 MOD. 340 S/34 MOD. E38 • CC7 UPGRADE FOR S/34

• We customize any System 34
• All Peripherals and Upgrades Available

CALL COLLECT: PAUL A. TON 714-578-5410

FOR SALE
HONEYWELL L-62 System
C Processor
224K Memory
(5) MSU310 Disk Drives
300 LPM Printer
Card Reader
Contact Mike Hollen
(415)968-1390
Mountainview, CA

CDC 80 MB 300 MB PHOENIX

DISK DRIVE SPECIALISTS
• Parts, Heads, Filters, PCB's
• Field Service
• Emergency 24 hr. Parts Service

WANG

CPU w/PHOENIX Disc Drive available immediately
SYSTEM MEMORY UPGRADES

XETA, INCORPORATED
51 LAKE STREET
NASHUA, NEW HAMPSHIRE
(603) 881-6122

ALL 370 & 4331 SYSTEMS

CPU's & Peripherals
Purchased, Sold & Leased

CORPORATE COMPUTERS, INC.
Contact: Norm Burger
(203) 661-1500
115 Mason St., Greenwich, Conn. 06830
Member Computer Dealers & Lessors Association

FOR SALE OR LEASE
IBM 3705 E8 Contr
IBM 3375 DASD
IBM 3370 DASD
AVAILABLE NOW
Please Call
(312)943-3770
Forsythe McArthur Associates, Inc
919 North Michigan Avenue
Chicago, Illinois 60611

There's No Time For DOWNTIME!

And that goes for your business as well as your computer system!

So, while the industry works on your system's problems, let us work on your business problems and advertise in--

COMPUTERWORLD CLASSIFIEDS!

One insertion will let a potential audience of over a half a million readers know what you are looking for or have to offer. Whether you are looking to recruit computer professionals, want to buy, sell or lease equipment, have computer time or services to offer, or software packages to sell, and more, **Computerworld Classifieds** will help you get a lot of exposure and get things done faster.

The open line rate is $6.95 per line and there is a minimum size of 1 column by 2" at a cost of $194.60. We can accomodate up to 5 columns and depth measurement increases by half inch increments.

Ads may be mailed in, cleanly typewritten; with a letter stating the size desired and the issue in which it is to be run. Our team of adtakers will take ads that require no extensive artwork or borders over the phone. We also provide telecopier service.

Any borders, logos, or artwork should be sent in with your ad and must be dark and clear enough to be reproduced.

Computerworld comes out every Monday and our deadline for receiving ads is 10 days (or six working days) prior to the issue date desired.

First-time advertisers must send payment along with their first ad.

Our mailing address is:

Classified Advertising
Computerworld
Box 880
375 Cochituate Road
Framingham, Mass. 01701

CW COMMUNICATIONS/INC.

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

→ NCR USERS

Are You Thinking of Trading Up ↑ ? or Down ↓ ?

Call Us for a Quote

SMITH ANDERSON CORP.
714-340-0680

Authorized NCR Systems Distributor - Nationwide
(New or Used Systems)

71-860 Highway 111
Rancho Mirage, Calif. 92270

DEC SHOPPER'S LIST

Item	Unit Cost
DR11-C	$ 400
DV11-AA	1,600
H9602 Cabinet	995
11/34A-LE	4,875
M7800 Bds (2)	250
TU77-AF Slave	16,000
RL11 Ctrl (3) New	1,900
H960-CA (5) New	1,500
MMT1-DP (10)	50
DV11-BB	1,000
DV11-BC	1,100
MK11-CE (1)	4,950
RK611 CTL Complete	3,500
DMR11-AC (2)	3,750
H9602-HA Incomplete	Call
H967 Cabinet	400

C. D. SMITH & ASSOCIATES, INC.
(713) 578-8484

BURROUGHS 6810
Available 9/15
BURROUGHS 2930
Available 9/1
BURROUGHS 5930
Available Immediately
BURROUGHS 4900
Available Immediately

2480 W Alameda Ave
Denver Colorado 80223
(303) 922-8331
Telex: 910-931-0483

BRAND NEW · WARRANTY · BRAND NEW ·

SCHERERS SPECIALS

DEC CRT's

VT100-AA	$1,325
VT100-WA	1,450
VT101-AA	975
VT102-AA	1,395
VT102-WA	1,450
VT125-AA	2,750
VT125-AA W/AVO	2,850
VT131-AA	1,295
VT131-WA	1,350
VT132-AA	1,450

DEC PRINTERS

LA38-GA	895
LA38-HA	995
LA38-AA	1,000
LA34-DA	795
LA34-AA	825
LA120-RA	1,695
LA120-BA	1,975
LA120-AA	1,895
LA100-RA	1,625
LA100-YA	1,725
LA100-ZA	1,995

CALL NADINE OR LAURIE
@ (614) 889-0610

SCHERERS
6145 Scherers Place
Dublin, OH 43017
(614) 889-0610

**In Kentucky Call:
Dave or Mike at:
(502) 425-9911**

**Scherers of Kentucky
10347 Linn Station Rd.
Louisville, KY 40223**

DEC HARDWARE & OPTIONS

UNIBUS

DZ11-A	$2,000
DZ11-B	1,500
DZ11-E	3,500
DMC11-AL/ DMC11-MD Set	2,500
DD11-CK/CF	300
DD11-DK/DF	600
DH11-AD	4,900
BA11-KE	2,400
FP11-A	2,100
DL11-A & C	375
DL11-WA	595
DL11-WB	675

DISKS

RLV22-AK	4,400
RL211-AK	4,000
RL02-AK	2,400
RXV211-BA	2,700

CPU BOARD SETS

11/34A CPU-SET	1,200
KDF11-AA	1,500

MEMORY

MSV11-DD	300
MS11-MB	2,000
MK11-CE	5,500
MS11-LD	1,400
MS11-JP (used)	105
MJ11-BE	3,000

CALL GARY OR GORDON
@ (614) 889-0610

BRAND NEW WARRANTY

IBM 168 COLLATOR WANTED

Must be in good working condition
Must qualify for IBM service contract
Prefer lease, but will purchase
Please state price and terms
(3) machines needed

Contact:

Audrey Sizer
U.S. Postal Service
Room 1104
475 L'enfant Plaza S.W.
Washington, DC 20260
(202) 245-4997

FOR SALE
(1) IBM 360/30

64K with I/O Set, Disks (2311), Tape, etc.
Complete,
Always Under IBM Service.
Available October 31, 1982.
For More Information
Call or Write:
Martin S. Erdmeister
Pratt Institute of Technology
Computer Center
227 W. 27th St.
New York, NY 10001
(212)709-7720

Buy - Sell - Lease

S/32
S/34
S/38

IBM 3741 3742

CPU's CRT's PRINTERS
ALL MODELS
PURCHASE/LEASEBACK
SHORT & LONG TERM LEASES

Computer Marketing of America, Inc.
P.O. Box 90607
422 Achlee Park Drive
Nashville, Tennessee 37209

Call: Dick Geyer
1-800-251-2670
In Tennessee: 615-297-7516

Buying • Selling • Leasing

IBM Systems & Peripherals

System 3
System 32
System 34

5110 • 5120

5251 (011 & 012's)
3741 • 3742
029 • 129

MARION

BUY•SELL•RENT

IBM SYSTEM/34

- IMMEDIATE DELIVERY
- ALL SYSTEMS ARE FULLY RECONDITIONED AND RE-CONFIGURED TO YOUR NEEDS
- GUARANTEED IBM MAINTENANCE
- PERIPHERALS
- UPGRADES
- FEATURES
- SHORT TERM RENTALS
- LONG TERM LEASES AT GUARANTEED SAVINGS
- PURCHASE/LEASEBACKS

A PHONE CALL CAN SOLVE YOUR EQUIPMENT PROBLEMS

TALK TO US ... NEW JERSEY (201) 343-4554
CONNECTICUT (203) 758-2409

WILLIAM MARION CO. INC

ATTENTION!
303X, 308X, 43XX USERS
IBM Computer Cables
We sell for less, and deliver faster.
CABLExpress
1712 Erie Blvd. East, Syracuse, New York 13210
(315) 476-3000 Telex: 93-7354

Inflation Fighters

Quality & Savings

Slightly used. Money Back Guarantee
Full Reels All External Labels Removed
Guaranteed for use at 800 BPI through 6250 BPI

2400' Reel	$4.95 ea
1200' Reel	$4.25 ea
600' Reel	$3.50 ea

All Tapes with Hanging Sheets
We pay freight on orders over 200 tapes
All orders shipped within 48 hours
Call or Write

Computer Tape Mart
169 S New Highway
Amityville, New York 11701
[516] 842-8512

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

MOVING SALE

We are moving to bigger and better facilities and must make room for new shipments. BUY NOW AND SAVE!

Call 800-854-0350

ALL EQUIPMENT FOR SALE OR LEASE

"The DEC Specialists"

DATALEASE SM 2770 East Regal Park Drive, Anaheim, CA 92806 in California call: 714/632-9995 or 408/287-7338

DEC SWA South West Automation DEC

BUY, SELL, LEASE, TRADE

11/03-23-24-34-44-70

Systems-Peripherals-Modules

Maintenance-On Call Or Contract

Time Sharing, A/P, A/R, GL, INV, Payroll, WP

11381 Meadowglen, Suite E

Houston, TX 77082

(713) 497-4467

ANY TERM LEASE

3033N8

AVAILABLE NOW

CALL

CHARLIE ALBRIGHT

(212) 742-2241

DEC SYSTEMS

Software support, complete installation

Immediate delivery on

11/780, H/750, 11/70, 11/44, 11/24, 11/23

New & used disk & tapes

RM05, RP06, RM03, RM02, TSI1, TU77

Non DEC peripherals, CDC, Kennedy, Emulex

Non DEC peripherals and options

Terminals and options

VT-100, LA120, DZ11, FP11's, DUP11's

Call (408) 739-3368

IDS international data services

1021 Stewart Drive

Sunnyvale, CA 94086 TWX 172-189

Buy & Sell

3330 Disk Drives

Sale or Lease

Avail. Immediately

GTEX

Call Ben Gee

(214) 783-1212

SALE OR LEASE

IBM 3083-E16

DELIVERY 12/3/82

FRANK MCCARROLL

COMPUTER AFFILIATES CO., INC.

212-273-6094

FOR SALE

DEC

(2) RKO6 Disk Drives

DEC maintained

$1200 each

CONTACT

Tony Vernace or

Ron Aleman

Call Collect

504/887-8550

---

1 Year 2 Year 3 Year Lease

3330-S8	Now
3033-N8	Now
3033-U16	10/1/82
3033-U8	11/1/82
3850 For 3033U	Now
3420-6	Now
3033 U12 To U16 Memory	Now
3803-2 With 1792-8100	Now

Call:

Charlie Albright

Sha-Li Leasing Associates

(212) 742-2241

39 Broadway

New York, NY 10006

FOR SALE

CHROMATICS

COLOR GRAPHICS

MODEL 3999 CRT TERMINALS

QTY 12 – Excellent Condition

- Keyboard
- Extended Card Cage
- Disks
- Free Expander Option
- Pattern Fill
- Extended Graphics
- 56 Byte RAM
- RS232 Port

CONTACT:

Phil Schlesinger

Comshare, Incorporated

P.O. Box 1588

Ann Arbor, Michigan 48106

313/994-4800

UNIVAC AVAILABLE

90/60 System & Peripherals

1900 CADE System & CRT's

BC7-800 System

1100/82 2 Meg

90/40 CPU/8433 Disk

Other Systems Available

Buying & Selling Univac

ANRIX CORPORATION

Tel.(602)949-0105

Hardware, software, problems, people, pricing, ethics, litigation, communication, macros, minis and micros.

We like to make an issue of it. EVERY WEEK.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

375 Cochituate Road, Framingham, MA 01701 / (617) 879-0700

DATA GENERAL

New & Used Equipment

BUY. SELL. TRADE.

McINTYRE'S

(313) 583-4100

TLX. 810-232-4866

Answer Back MCDATAGEN MAHS

Mini-Computer Sales Group Inc.

32050 Edward Ave.

Madison Heights, MI 48071

"MODEMS"

AND MULTIPLEXERS

COMPLETE PRENTICE LINE FEATURING THE

212A $619

FOR INFORMATION AND ORDERING

ONLINE DEVICES INC.

3822 WINNETKA ROAD

GLENVIEW, ILLINOIS 60025

312·291-0699

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

NCR USERS

We deal exclusively in NCR Computer Equipment. If you're buying or selling deal with the nations oldest and largest. Contact Gary E. Zywotko.

(612) 884-0758
Computer Connection Corp.
8120 Penn Ave. South
Minneapolis, MN 55431

We Buy & Sell
DEC
Systems
Components

Digital Computer Resale
call:713 445-0082
600 Kenwick Ste C22
Houston, Tx 77060

BUY • SELL • TRADE

CDC

DEC DG CDC

CALL FOR OUR MONTHLY SPECIALS

Buy/Sell/Lease
SWITCHING
IBM 2914/3814
Locom LCM-500
T-bar 3915/3916
DataSwitch 1000
Beall BCS-3/BCS-5
Jack McAuliffe
4255 LBJ Freeway #210
Dallas, TX 75234
214-661-3961

GSD SYSTEMS SYS 3 SYS 32 SYS 34 SYS 38

SERIES 1 SYSTEMS We will buy any system

FINANCIAL PRODUCTS 1419 1255 3600 3890

DPD SYSTEMS 4331 4341 3031 3032 3033 3081

MEMORY AVAILABLE FOR ALL IBM PROCESSORS

★ When you have to be right on the money,

call **dataserv**

TOLL FREE 800/328-6729
IN MINNESOTA CALL COLLECT 612 933-2575

PERIPHERALS All Peripherals on short or long term lease
3330 3340 3350 3370 3880 3410 3411 3420 3203 3505 3525 4403

Dataserv helps you get maximum return on every dollar you invest in IBM equipment. Call us when buying, selling or leasing.

dataserv DELIVERS IBM COMPUTER MAINTENANCE AT MONEY SAVING PRICES. CALL FOR DETAILS.

CDLA

3031-8
Available Now
Can Reconfigure
Control DPL
Company
Call Rohn or
Bob Miller
(612) 884-3366

IBM
BUY SELL LEASE
System 34 & 38
Wanted
5256, 5211, 3262
5251 Model 11 & 12
3370-A11 & B11
Jim Kelley
Coastal Computer Marketing
(213) 986-4830 CDLA

Magnuson Computer Systems
M80 Series
For Lease or Purchase

According to Datapro's latest survey, Magnuson has out performed comparable IBM equipment in the areas of reliability, service and operation. Fully upgradable and supported by Magnuson Computer Systems, these units are being offered at competitive prices with immediate delivery.

Call: Kirby Rapp
(415) 383-6766

DEC
2060 SYSTEM
FOR SALE
C. D. SMITH &
ASSOCIATES, INC.
(713) 578-8464

EQUIPMENT AVAILABLE

Description	For Sale/Lease	Date
370/168		
3168 - U34 (2150 2151, 3855, 4650, 6111, 7850, 7905 3066-2 and 3067-3)	Lease Only	Now
3168 - U32 (2150 2151, 2152, 3623 3855, 4650, 6111, 7850 3066-2 3067-3, 2860-2, 2870-1, 2860-2)	Lease Only	Now
3168 - KJ (1435 3855, 3066-2, 3067-2, 2-2870's, 3-2860's	Lease Only	Now
370/158		
3158 - U35 (1433, 1434, 1435, 7840,3213-1)	Lease Only	Now
3158 - U34 (1433, 1434 1435 2150, 2151, 4650, 6111, 7840 4450 3213-1	Sale or Lease	Now
3158 - JI (1433, 1434, 7840, 3213-1)	Lease Only	Now
3158 - J (1433, 1434, 1435, 4650, 7840, 7905, 3213-1)	Lease Only	Now
3042		
3042 - 2	Lease Only	Now

215/964-2000

Contact: Jack Northrop
Lease Financing Corporation
3 Radnor Corporate Center
100 Matsonford Road
Radnor, Pa 19087
215/964-2000

LFC CDLA Member Computer Dealers & Lessors Association

Dealers in: **IBM** PROCESSORS/ PERIPHERALS

3350 ALL MODELS IMMEDIATELY AVAILABLE
3370 NEW AND USED 30-120 DAYS
3375 NEW 30-120 DAYS
3380 NEW 30-120 DAYS

—SELL OR LEASE—

ALSO AVAILABLE:

4331 Systems	Used-Immediate
4341 Systems	New and Used-Buy and Sell
Series 1	Want to Buy Any Model
System 3	All Models-Best Buys
System 32	Several-Immediate
System 34	Large and Small-Immediate
System 38	New and Used
3880	Mod 1-2-3 30 Days
3278	Mod 2-Immediate
3279	Immediate
3287	Mod 1 and 2-Immediate
3350	Several-For Lease-Immediate
3340	A2 and B2-Immediate
3344	Several Available
3411/3410	Several Available
3420	Most Models
3741/3742	Several Available

CDLA Member Computer Dealers & Lessors Association

ASCD Member American Society of Computer Dealers

data:3 1-800-328-7938

FOR SALE OR LEASE
3276-2's
3278-2's
3287-2's
LARGE QUANTITIES
IMMEDIATE AVAILABILITIES
Call 214/399-6641!

MCC METROPLEX COMPUTER COMPANY, INC.
320 Decker Drive • Suite 180
Irving, TX 75062

AUCTIONS

TELECOMMUNICATIONS EQUIP. AUCTION!
TUESD., SEPTEMBER 28 10 a.m.
GTE TELENET COMM. CORP.
2727 MERRILEE DR.
FAIRFAX, VIRGINIA

Large Selection M. CENTRONICS 101A Printers, Burroughs Terminals, GENRAD 2235 Logic Testing Syst. Time Plex Cards, Modems, Power Supplys, Chassis, Cabinets, Disc Drives, Channel Cards, Driver Cards Hand Control Cards, Terminals, Office Furniture File Cabinets, Work Benches, Consoles, Forklifts, Circuit Boards, etc.

TERMS: CASH — CASHIER'S CHECK — CO. CHECK w/2 bank letters of credit. Full payment w/negotiable funds on sale day!

Info.- Jack Lolley 703/442-1600

Write/call for free Brochure!

RENE BATES
Auctioneers, Inc
RT. 4 - Mattaney, Texas
214/546-1994 - 75000

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

DATA GENERAL

FOR SALE
DATA GENERAL
(2) 4340 MP's
(1) 1085 IPB Cable
(1) 6082 Dual Port Controller
Multiple Funding Services, Inc.
330 West 42nd St., 23rd Floor
New York, NY 10036
Attn.: Jim Reiley
(212)947-2000

6061-H	$21,500
6070 S/S	$6,250
6053	$1,150
D/200	$1,150
DG 6122 Disk S/S	$27,500
4251 New	$1,159
Nova 4S 16 Slot New M/D	B/O.
RTC	$5,650
Nova 4/C New	$2,550
ALM 6	$1,350

SYSGEN DATA Ltd. (516)466-7777

C330 System 512KB	Call
C350 System 512KB	Call
8703 512KB MV8000 Mem	$6,500
8656 256KB Eclipse Mem	$3,900
6387 256KB Nova 4 Mem	$3,100
8687 256KB S140 Mem	$3,200
6021 9-Track Sub-System	$4,850
6027 9-Track Sub-System	$8,500
6040 Dasher	$1,000
6099 LP2 Printer	$2,400
6053 D2 CRT's	$1,400
6106 D100 CRT's	$1,000
6108 D200 CRT's (NEW)	$1345
6060 Disk Add-on	$15,500
6061 Disk Sub-System	$22,500
6061-A Disk Add-On	$19,400
6122 Disk Sub-System	$33,000
8642 Burst MUX	$2,100
4251 Com Chassis	$1,100
4255 ALM-8	$1,350
4258 ALM-16 (8 Line)	$1,000
Printronix 300 LPM	$3,500

Intl. Computing Systems (612)941-2941

For Sale By:
LEVITZ FURNITURE, INC.
(203)741-2926

"Data General Equipment"

Nova 2/10 CPU Chassis	$300
CPU Boards with APL	$200
8kw Memory Boards	$100
16kw Memory Boards	$200
4074 SLA Boards	$200
Basic I/O 4007/8/10/23/19	$150
4083 Quad Mux Boards	$200

"Data General Compatible"

Printronix P300 300lpm Ptr	$3500
Printer Controllers	$100
Diablo 1620 KSR Ptrs	$1500
Dynex 6203 10Mb Disk	CALL
Digidyne D3001 Disk Cntrls	$900

"Miscellaneous"

IOC LSI 20 Modems 2000bps	CALL

FOR SALE
ECLIPSE C350 SYSTEM
Includes: 1 Mb, 3 Bay Cabinet, (3) 6061 Disk S/S, (1) 4215 600 LPM, (1) 6027 Nine Track, (1) 4251 Comm., (8) 4257 ALM-16, (4) 4261 SIA, (15) 6053 Terminals
We Configure As Needed
International Computing Systems,
(612)941-2941

FOR SALE: Eclipse C330 System
Includes: 384K, 3 bay cabinet, (1) 6061 disk, (1) 6021, (1) 6023, (1) 4218 300 LPM, (1) 6040, (2) 6053, (2) 4075, (2) 4077, ALM-8, (1) 4076, (1) 4079, (1) 4251, (1) 4263, (1) 8414, (1) 1129 TOF, and (1) 4217.
Call: Sam Patterson
(800) 325-8873
Or in Missouri
(314) 847-3800

INVENTORY REDUCTION SALE
PROCESSORS
S/120, 512 KB, 16 Slot, NEW w/MBS Software
CS/50, 256 KB, Cabinet
Nova 4/S, 32 KB, 16 Slot, NEW w/MBS Software
Nova 1200
DISK
6100 12.5 MB + 1.25 MB Diskette s/s
4231-A 92 MB Disk Add-on
6100 25 MB Plus 1.25 MB Diskette s/s
6070 20 MB Disk Subsystem
6031 Single Density Floppy
TAPE
6021 800 bpi Magnetic Tape
MEMORY
Nova 4 256 KB MOS
Nova 3 64 KB MOS
Nova 3 32 KB MOS
Eclipse 16 KW Core
Eclipse 8 KW Core
COMMUNICATIONS
4251 Communication Chassis
4258 8 Line ALM-16
4063 Quad Multiplexor
Cassette I/O
Basic I/O
PRINTERS
4215 300 LPM LP-2
4034-G 300 LPM
CABINETS
1012-K Single Bay
1012-L Dual Bay
MBS, INC. (608)273-2066

Nova 4/X 256KB	$9,000
CS/30, CS/40, CS/50	CALL
S/230 256KB, AOS	$12,000
S/130 128KB	$10,000
C/350 512KB, AOS	$35,000
6026, 6125, 6021 Tapes	CALL
6161 147MB Disk	Call
6061 190MB Disk	$20,000
6070 20MB Disk	$6,000

AMES SCIENCES, INC.
301/367-3140

DEC

MAINTENANCE
PDP-11/03 THRU 11/70
PERIPHERALS: CDC, PERTEC, PRINTRONIX & OTHERS
Servicing: San Jose, Monterey, Santa Rosa, Sacramento, San Francisco, Santa Cruz
408/293-6202
SCIENTIFIC RESEARCH MANAGEMENT CORP

FOR SALE: DEC 11/70
DEC 11/70 CPU
(2) RP06 Disk Drives
(1) PU16 Tape Drive
1500K Mos Memory
256K Core Memory
LA120 Console
Currently on DEC Maintenance
Wycliffe Bible Translators
Contact Jim Bederick
(714) 838-6346

DEC SPECIALS

LA120-AA (Unused)	$1600
LA120-RA (Unused)	$1500
LA120-GA (Unused)	$1600
LP05-VK (New)	$4500
MS11-JP (Unused)	$79
MS11-KE (Unused)	$450
MS11-LB (Unused)	$850

SEVCO INC.
(617) 393-3025

DEC BARGAINS

11/44 Cache KK11B	$2475
11/44 KE44-A 'CIS'	$2975
11/34A Cache KK11A	$1785
11/70 1/2MB, MK11-CE	$3475
11/44 256KB, MS11MB	$1750
11/34 256KB, MS11LD	$1375
11/34 128KB, MS11LB	$990
11/34 32KB MS11JP	$175
11/23 MSV11DD mem	$385
11/03 MSV11B mem	$85
PDP8A 32KW mem	$875
DZ11 MUX Brd	$1275
FP11A Fltng pt.	$1875
FP11F Fltng. pt.	$1865
VT62AC terminal	$485

CALL RAY (617)275-6800

DEC NEW & USED

11/34A-YE	(NEW)	$10,500
FP11-C (NEW)		$4,950
DL11-W (NEW)		$500
DMC11 (USED)		OFFER

Systems • Options • Peripherals
LAKEWOOD COMPUTER CORP.
3200-8 Keller St., Santa Clara, CA 95050
(408)266-2545

INVENTORY CLEARANCE
All New DEC Systems & Components
DECmates w/wp Software
11/24-AC Box
11X44-CA Box
TU78-AB Master Tapedrive
TU77-AB Master Tapedrive
VAX 11/780, 750 & 730
Custom Software
ACCESS INT'L (617) 367-3062

DEC TERMINALS
Cheapest In America
The Terminal Company
(617)872-2901

TSM/MUMPS
MUMPS language interpreter for RT-11. Includes B-tree based globals and string subscripts. For details write:
Kevin C. O'Kane
Rt. 4 Box 634
Louisville, TN 37777

IN STOCK SALE
IMMEDIATE DELIVERY

UDS 103-J LP	$199.50
UDS 212 LP	$489
RP06-AA	$13,500
RM05-AA	$18,500

CIRCLE DATA
Tulsa, OK
(918)664-6182

USED DEC
(4) VT52 AE
(2) VT52 AA
$400 each
Please contact
(313)924-1020

For Sale by Owner to End User
VAX 11/750 SYSTEM
Installed 5 months
1 MB, 256 MB disk drive, 1600 BPS tape drive, 16 line MPX, 600 LPM printer, (10) CRT's, (3) printer-keyboard terminals.
Call (514)459-7681

HEWLETT PACKARD

HEWLETT PACKARD
1000 • 2000 • 3000
SERIES
Systems • Peripherals
AIRBORNE DATA SYSTEMS
Purchasing: 209/533-2400
Accounting: 408/262-8137
TELEX 176050 FAX AVAILABLE

HEWLETT PACKARD
SERIES 1000 • 3000
AND ALL HP
PERIPHERALS
encore
213-393-4932

HARDWARE SPECIALS
HP3000
Systems & Peripherals
Datacom Equipment
Call Hans Frontschek
(212)964-9600
Software Systems Technology Inc.
15 Park Row, New York, NY 10038

HP3000
Systems & Peripherals
For Sale or Lease
7925S Disk Drives
Available NOW
Call Richard Peyton
(301) 948-2685
PVF Inc.
Rockville, MD

HP-1000
256KB Memory/20MB Disk
Up right Cabinet
Graphics Console w/Dual
Mini Cartridge I/O
CRT's and Printer
Perfectly Maintained By HP
Call Ms. Taylor
(212)267-2929

WE BUY AND SELL
HP 3000 COMPUTERS
SERIES/III, 30 & 33
Complete Systems, Memory, Terminals, Disk Drives, Tape Drives, Miscellaneous Parts.
AVAILABLE IMMEDIATELY
FINLEY & ASSOCIATES
(213) 829-9646

FOR LEASE (ALL OR PART)
HP 3000 III, 2 meg CPU
7970-E Tape Drive
(4) 7925 Disk Drives
(2) 600 LPM Printers
(7) 2645 Term. (1) 2626 Term
THE COMPUTER PLACE
4695 Van Epps Rd
Brooklyn Heights, OH 44131
Call Mike Mason 216-351-7444
TWX 810-421-8446

HP 85F
Closing Personal Computer Division
(3) For Sale At Bargain Prices
Mr. Van der Kaay
(800 237-9683
(813)934-0629

FOR SALE
HEWLETT PACKARD
LASER PRINTING SYSTEM
(2) 2680 Laser Printers
3000-40 (1024 KB mem)
7970 Tape Drive
404 Plus 64 MB Disk Drives
2648 Plus 2621 Terminals
Contact Kevin Doherty
(617)491-6800

Find a computer in Cleveland, or a disk drive in Detroit. Right here in Computerworld's Classifieds

IBM

FOR SALE OR LEASE
3033 Memory 8-16 MB NFC
Available Now. Call For Details.

(Qty.) 3333-1	$1,750
(Qty.) 3330-1	$1,250

We Accept Trade-Ins
Call Data Sales
1-800-328-2730

Wanted For Immediate Lease
(3 MONTHS)
IBM 3033AP
Components Desired Include 24K Memory and System Extension
Principals only. Please respond with terms, prices and conditions.
Reply to CW-A3331
Computerworld
Box 880, Framingham, MA 01701

CUT COSTS
On
IBM 3275/3276 Remotes
With The
BEEHIVE DM 3270
Only
$1995
Leasing & Quantity Discounts Avail
EDP Inc. Southfield, MI
(800)521-0302 (313)352-7272

3340's
For Lease
Any Term
Any Rate Considered
(215)628-4040 (415)941-9164

FOR SALE
(1) 3370-A1 (ss)
(3) 3370-B1
USED AVAIL. 10/1/82
Call John M. Costello
RALION CORP.
49 Riverside Ave., Westport, Ct 06880
(203)226-1114

Available January 2, 1983
IBM 370/135
1403 Model N01, (3) 3340's, (1) A2 (2) B2's, (5) 3420 Tape Drives Mod 3, 3803 Mod 1, 3505 Mod B1. Will sell all or part, under continuous IBM maintenance
Contact Frank Tantillo
(212) 962-4646

IBM 3168 For Immediate Sale
Components include: U35 CPU, 3855 - extended channels; 4850 - integrated storage; 7905 - 2 channel ISC switch; 7730 - System 370 extended feature and 7850, 6111, 2151, 2150.
Please respond with offer and delivery requirements. Reply to:
CW-A3332
Computerworld
Box 880, Framingham, MA 01701

FOR SALE
IBM 3864 & 3865 Modems
RIXON T208A Modems
(9600 bps)
M & M DATA PRODUCTS, INC.
405 Main St., Metuchen, NJ 08840
CONTACT: MIKE SIMON
Tel. (201)494-2610

IBM 5120/5110
SYS 32 SYS 34
Tubes & Printers
Available Immediately
We Also Buy IBM Equipment
National Data Systems, Inc.
50 Congress St., Boston, Ma 02109
(617)720-1313

IMMEDIATE DELIVERY
NEW 5291's
$86 - 24 Mo. Lease
$110 - 12 Mo. Lease
SAVE ON PURCHASE
CALL 800/328-6729
DATASERV
Also Available 5292's

NEW 5291's
$58 - 36 Month Lease
$79 - 24 Month Lease
Call Howard Kozinn
DATALEASE CORP.
(203)222-0170

New 5291's, 5292's
Qty. discounts - Lease
3340 A2; $542/Mo.
Sale/Short term lease
Vargo Companies
313-254-2850

IBM

IBM 5120
32K Basic
Fast Printer
Practically New
Free Software
Bob McGrath
(305) 821-3100

For Sale
3741
DATA RECORDER
Currently on IBM Maintenance
$2000
Contact: (503) 746-2571
Bill Vaughn

IBM 3370 Disks
A1 & B1
Available 9/25
F.O.B. NJ
Computer Merchants, Inc.
(914) 238-9631

WANTED
SYSTEM 34
C23
Call Ron Gibb
(914) 238-9631

IBM 8100
INFORMATION SYSTEM
8130 Processor
8101 Disc Storage Unit
8809 Mag Tape Unit
3289 Line Printer
Asking Price is Negotiable
Call Tom Lawson (417)831-2881
Bell Savings and Loan Association
P.O.Box 1775 S.S.S. Springfield, MO 65805

FOR SALE OR LEASE
S/34-D24, 5211, 5251-11
3277-2's (Most Keyboards)
S/38-661, 3370, 3262
5415-D24 System
3340-A2, 1403-2 WANTED
3741-2, 3340-B2 3277-2's, 4633
Available Now At A Great Price
DATAMARC (404)252-7400
6055 Roswell Rd., Atlanta, GA 30328

WANT TO BUY
SYSTEM 34's
ALL MODELS
Hans Bressler
DATA 3 COMPUTER CORP.
(612)941-9495
(800)328-7936

FOR SALE
By The State of Ohio
IBM-CPU's
1 Each Model 3033MP
16 MB Memory w/24 Channels, Consoles, PCDU's
For Information & Bidding Instructions
Contact -
Bob Greesham or Jerry Hammett
(614)466-7390 or (614)466-5000

FOR SALE
IBM SYSTEM 3/15
96K, 100MB, 600LPM, Console & 3741 Complete: $9,000.00.
384K, 200MB, 600LPM, Console & 3741 Complete: $24,000.00.
Call C. HANNA (416)441-3143

SYSTEM 32/34/38
BUY SELL LEASE
Peripherals-Features
Disk & Memory Upgrades
MIDLAND MARKETING CO.
(612)933-4146

SYSTEMS 34/38
Lease or Sale
WANT TO BUY S/34's
(FOR INVENTORY)
Models & Peripherals
WE PAY CASH
LEAS PAK INTERNATIONAL
Tel.(617)268-0023

SYSTEM 38/MOD 4
LEASE ONLY
3 - 4 - 5 YEARS
AVAILABLE NOW
Barlow MacArthur Inc.
(617)444-8408

IBM

SYSTEM 34
BUY SELL LEASE
Peripherals - Features
Disk & Memory Upgrades
American Computer Exchange
(216)247-2100

SALE OR LEASE
IBM SYSTEM TYPE
Data Modules
Disk Packs
Quantity Discount
Call or Write
Costa Computer
141 E. 33rd St.
NYC, NY 10016
212-532-5400

WANT TO BUY
SYSTEM 7's
5010-E 64, 5998-T01, 3340-A02
SERIES 1's
Mod 4955D, 4978, 4962-2F
Call Dan Lundy
(206)641-7363

3203-5
WANT TO BUY
Call Mort Crandall
(203)629-3838

Wanted For Immediate Purchase
IBM 3033AP
Components Desired Include 24K Memory and System Extension
Principals only. Please respond with terms, prices and conditions.
Reply to: CW-A3330
Computerworld
Box 880, Framingham, MA 01701

SYS 3/15D
Complete System $7500
3776-2
1 Yr. $700/2 Yr. $400
Purchase $15,900
SYSCOMP
(813) 796-4310 Collect

MISC.

WANTED
Vintage Computers
Computer Boards
Components - Wire
Contact Mike (201)779-3898
M & S SCRAP
436 Paulison Ave., Passaic, NJ 07055
Trade your scrap for gold and silver

Radio Shack TRS-80
Computer for sale. 64K RAM, 1 CRT with double density Disk Drive, 2 double density Disk Drive subsystem, CP/M Operating System. 6 months old. $4000. Call (212)279-8400.

FOR SALE
DISK PACKS

3336-1	$35 each
2316	$20 each
3348-70 (Non IBM)	$150 ea.

Call Data Sales
1-800-328-2730

COMPUTER FLOORS
Used-New
Bought-Sold
Installation
Alteration
Refinishing
Parts and Service
RC PULIS ASSOCIATES, INC.
16 Voorhis Lane
Hackensack, NJ 07601
(201)488-3333 or (212)564-4636

DATAPOINT
Buy* Sell*Trade
American Computer Exchange
(216)247-2100

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

BASIC FOUR

Basic Four Model 2924 Disks
Guaranteed
$35 Each Plus Shipping
(212) 943-3650
Ask for DP Manager

BUY SELL TRADE
BASIC 4
Systems,Peripherals, or Components
Sorbus Guaranteed
ALETA ENTERPRISES INC.
28 Esplanada, Irvine, Ca 92715
(714)652-3559

BURROUGHS

WANTED TO SELL
1055 SYSTEM
• With 524KB Multi-bus control
• (2) 205 Drives, 750 LPM Printer
WANTED TO BUY
• TD830 CRT's, MT983 CRT's
• All Systems & Peripherals
B1955 Avail. 4th Quarter
Mr. Ross (216) 292-3774

Call
1-800-343-6474
to place your ad

NCR

NCR BUY/SELL/LEASE
658 DISK UNITS
Eligible for NCR Maintenance
Available Immediately
HARWOOD & ABBOC.
2 Northgate Park, Ste 304
Chattanooga, TN 37415
Tel.(615)870-5800

HONEYWELL

200/2000 SERIES
BROWN COMPUTER SERVICE, INC.
RENTS, SELLS/LEASES, and MAINTAINS:
Complete and partial systems & peripherals with up to 50% discount on current HONEYWELL prices.
Exclusive HONEYWELL Dealer
In Business Since 1976
Call or write W. S. Brown etc
1000 Southcrest, Arnold, MO 63010
(314)944-3323

HONEYWELL LEVEL 62 SYSTEM
500 K Memory
(4) MSU 330 Disc Drives
600 LPM Printer
(4) 7760 CRT's & Control Unit
Will Sell All or Part
Call: Super Products Corp.
Craig Scherberth
(800) 558-6199

DPS-6 and Level 6 Users
The "2MF" is here
the Magic Number!
After our fantastic breakthrough in our engineering department we are proud to announce another breakthrough which will impress you, the user
NOW HERE THIS
2000MB Storage Module (MSU8104 & MSU8004) unconditional warranties for a full
3 year Or
30,000 hours from date of installation at our unbelievable price-
You have guessed it
$30,000 ($1 per hour)-Available Now
Also if you buy
3 or more you get the 4th unit as a spare.
Call: Kenus Systems, Inc.
9800 West Lawrence Ave., Ste. 101
Schiller Park, IL 60176
(312) 671-4530

LEVEL 6 & DPS 6 EQUIPMENT
NEW & REFURBISHED
Systems • Peripherals • Memory
CRT's • Applications Software
SUBSTANTIAL DISCOUNTS!
Southeast Computer Services Ltd.
100 South St., Hopkinton, MA 01748
(617)435-5355
TWX 710-347-7575

LEVEL 62-64
LEVEL 6
SERIES 200-2000
SYSTEM OR PARTS
URS
66 Montvale Ave.
Stoneham,Ma. 02180
(617)438-4300

HONEYWELL 62 USERS
WE BUY-SELL-LEASE & TRADE
Your Honeywell 62 Equipment
Available Immediately
MSU 330 disk drives, MTU 220 tape, drives, and VIP 7700's
The Computer Place
4595 Van Epps Rd
Brecksville Heights, OH 44131
Call Bill Briggs 216-351-7444
TWX 810-421-8448

PERKIN ELMER

New Perkin Elmer
550 8 Video Display Units
$500
Avail. For Immediate Delivery
Call Stuart Hamilton
(312) 864-3030
Applied Information Development Inc.

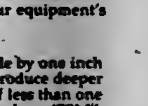
PRINTERS

PRINTERS - PRINTERS - PRINTERS
FOR SALE OVER 200
CENTRONICS MODEL 586
All Under Ft Maintenance Contract
CONTACT
JERRY WRIGHT
412-323-4251

TERMINALS

DATASOUTH
DOT MATRIX PRINTER
180 cps
OEM PRICING!!!
IMMEDIATE DELIVERY
MCD CORPORATION
(313)994-1020

HARRIS TERMINALS
5 - 8770 Display Terminals
1 - 8770 Controller
1 - 120 CPS Printer
Call Super Products Corp.
Craig Scherberth
(800) 558-6199



SPERRY UNIVAC

For Sale
UNIVAC BC/7-700
Good Condition 64K, 10MB, (2) CRT's, 200CPS Printer, Packaged Software.
Call Howard Stokes at
(602) 582-3170

FOR SALE
BC/7-800, 20 MB, 128K, (2) CRT's, 200 CPS Printer, Certified for mfg. maint., $16,000.
Stan Nystrom
1-816-474-1553

FOR SALE
BY THE STATE OF OHIO
(10) 8433 w/F2021-80 Dual Channel
(1) Each 8046-87 Dual Computer w/36 Bit Channel Width
For Information & Bidding Instructions Contact
Bob Gresham or Jerry Hammett
(614)466-7360 or (614)466-8660

Your ad can be seen here for just $99.

TI

TI
700's, 800's, 900's, 200's, 300 PRINTERS
TERMINALS
SYSTEMS
LOWEST PRICES
IMMEDIATE DELIVERY
THE COMPUTER BANK
(516) 549-5660

WANG

VS Memory
MVP Memory
DPU With
Phoenix Drive
2236 MXD Board
Triple Controller
Call John Kelley
(603) 882-3760

Wang Mins & Micros
• Contract Programming
Ans Cobol
• Accounting & Business Applications
• Consulting Hardware & Software
• Complete Training & Support
Call (201) 489-2290
CLIFF DATA SYSTEMS, INC.

WANTED
TO BUY
ALL WANG
Systems, Hardware & Etc
Call
(617) 372-8536
CPR Associates, Inc.
"The Specialists"

FOR SALE
(Optimal SEMTEX Disk Packs
Model #94-02204-00
WANG 2330-1,2,3 Wang 82008, WCS30 2360V or Western Dynex 560 compatible
Brand New
Sacrifice $80 Each
(800)251-1078
Ask for Al Edwards

SYSTEMS BUY/SELL PERIPHERALS
WANG
DATA & WORD PROCESSING
CPU's, CRT's, Disk & Tape Drives, Printers, Memory Upgrades, Disk packs
(212)431-1100
ERIST INTERNATIONAL

VS CONVERSION
FAST, INEXPENSIVE
Reliable Software Conversion
To the WANG VS
NETRON, INC.
50 St. Regis Crescent North
Downsview, Ontario, Canada M3J1Y8
(416)636-8330

WANG COMPATIBLE
256K Memory VS-80 $5000
128K Memory MVP $1200
Dual Port (Parallel/Serial) Printer Controller $450
Centronics Interface Adapter For Qume Sprint 9 $200
Southern Data Systems, Inc.
919-751-7063

MISC. SYSTEMS

TESDATA
MS-880 Computer Performance Management System, 128K mini-computer, 24MB DASD, 1600 BPI tape, CRT, graphic printer, message display unit, graphic display unit, 72 probes and related software.
(312) 491-6794

DISK DRIVES

CDC 9766
$11,500
Call Ann
(714) 632-6925

MODEMS

BANNER MODEM SALE

Modem	List	Sale
UDS 212LP	$495	$435
Vertel 212-1	$750	$649
GDC 212M	$750	$695
Vertel 212-3		
plus autodialer	$995	$750
GDC 201-7	$725	$495
UDS 208 A/B	$1,750	$1,375
EDP Inc.		Deerfield, MS
(800)521-6300		(312)563-7272

EQUIP YOURSELF IN THE CLASSIFIED PAGES OF COMPUTERWORLD

THE BULLETIN BOARD

What is The Bulletin Board?

It's a classified section in Computerworld designed especially for the selling and buying of individual pieces of hardware in a convenient, low-cost format. It is especially suited to companies that have a piece of used equipment they want to sell. For one low price, you can inform more that half a million Computerworld readers around the country of your equipment's availability.

How Does The Bulletin Board Work?

Bulletin Board ads come in standard units (one column wide by one inch deep) and standard typefaces. (Units may be combined to produce deeper ads, but one column is the maximum width and no units of less than one inch are available.) Ads are arranged under headings (such as "IBM", "DEC" or "Printers"). The headline of the ad is set in larger, bold type, and should contain the standard equipment identification. The body copy should describe the equipment very briefly and give the person to contact. This is all the information an interested buyer needs to follow up. No ad should have more than one piece of equipment or software.

Price for each standard unit is only $99. (One unit minimum and no fractional units available.) Anyone can place an ad, but no agency commissions are paid, no quantity discounts allowed, and no credit toward rate is given for contract advertisers who advertise in other sections of Computerworld. It's a simple and effective system for buying and selling hardware and software.

Ads are accepted in the mail, by phone or by telecopier. Ads can be accepted up until the Monday before issue (7 days in advance of issue date). You should write out your ad before submitting it. (The standard size will hold approximately 25 words of copy.)

Once you've written your ad, send it in with the coupon below or call one of our ad-takers. (If your company has never advertised with us before we request a check with your order.)

Remember that all ads are standard. No special typefaces, no borders and no logos are allowed. Ads are set on a six-column page in our classifed section under the heading "The Bulletin Board.". We assume no liability for errors beyond the price of the ad in the case of material errors.

ORDER FORM

Issue Date: Ads can be accepted up until the Monday preceding the issue desired. Computerworld comes out every Monday.

Classifications: Most ads will be classified according to the brand of equipment that is being bought or sold. These classifications are: Altos, Burroughs, Control Data, Data General, (Digital/DEC, Hewlett Packard, Honeywell, IBM, NCR, Sperry Univac, Teletype, Terminals, TI, WANG, Miscellaneous.

Copy: Copy for your ad must be clearly typewritten and may be sent in via the mail or by telecopier (telecopier extensions are 410 and 451). Ads may be given over the phone to our team of ad takers. The standard size is 1 column by 1 inch deep. These units may be combined to form larger sized ads. Describe the equipment very briefly, give the price and the name of the person to contact. All ads will be set up using a standard format. No borders or logos are allowed.

Cost: The price for each standard unit is $99.00 (One unit minimum and no fractional units allowed). There are no agency commissions and no quantity discounts.

Billing: Once you've written your ad, send (or call) it in with your name and address for billing purposes and we'll run it. (If your company has never advertised with us before, we request a check with your order.)

Issue Date(s): _____

Signature: _____

Name: _____

Company: _____ Title: _____

Address: _____

Telephone: _____

Send this form to:
COMPUTERWORLD BULLETIN BOARD
375 Cochituate Road, Box 880 Framingham, MA 01701
(800) 343-6474 (617) 879-0700

SOFTWARE FOR SALE

PDP-11 & VAX USERS
TRANSACTION PROCESSING

Cytrol's CYX system is the best choice for your complete transaction processing needs. A proven performer, CYX simplifies on-line application development to save time and money. We've removed the obstacles that can trip up smooth transaction processing to guarantee efficient, reliable systems.

Basic CYX extends RSX-11M/VMS to provide:

- Communications Management for 3270 type terminals.
- Screen Management with input editing and data validation.
- A Data Base Management System that delivers improved on-line performance.
- An unrestricted RSX-11M/VMS environment.
- Transaction Roll-Back with full restart/recovery.
- Performance Reporting

And...CYX supports optional software products that expand CYX services to include:

- 3270 Reach Through
- Report Writing
- Security Control
- Mailbox Functions
- Centralized Program Error Reporting
- Text Filing
- Data File Maintenance Functions that eliminate the need to write programs to add, delete or modify records.

All additional applications can be written in any DEC supported language and have access to all RSX-11M/VMS services.

For more information about the CYX Transaction Processing System and how Cytrol can work for you, call or write

cytrol

4570 WEST 77 ST, EDINA, MINNESOTA 55435 PHONE 612/835-4884

Elegant Software

For IBM S/34 & S/38 Computers

- General Ledger/Financial Reports
- Accounts Payable
- Accounts Receivable
- Payroll/Personnel
- Order Processing
- Inventory Management
- Mailing Lists
- Fixed Assets
- Oil & Gas
- Job Cost

J. D. Edwards & Company
Two Denver Technological Center
Englewood, CO 80111
303/773 3732
Dallas/ 214/ 494 8911
Newport Beach/ 714/ 751 5302

COMPAREX

File comparison utility to compare DATA or TEXT files of any structure or organization including DBAM, ISAM or VSAM. Works on IBM mainframe or plug-compatible under all OS/VS and DOS/VS derivatives. Isolates inserted, deleted and modified records in any file including data bases, program source code, JCL, master files, etc. Performance and support are guaranteed. Demonstration, training and trial installation available.

Serena Consulting
P. O. BOX 5574
SAN MATEO, CA 94402
(415) 349-0800

STOP

SPENDING MILLIONS DEVELOPING COMPUTER PROGRAMS

Over 100 U.S. government agencies have invested significant development resources. SAVE NOW! Existing available programs are identified in the *DIRECTORY OF COMPUTER SOFTWARE.* Non-N. America VIA AIR $60.00

Inquires to: INFO/DOC
Box 17109 • Dulles International
Washington, D.C. 20041 U.S.A.
(703) 979-5383 TLX: 90-3042
VISA/Mastercard accepted.

SECURITY for IBM S280

Complete security for your systems by controlling access down to the program level.

Peace of mind for $500.

For complete user manual call or write

Turner - Moore Associates
P.O. Box 123
St. Matthews
South Carolina 29135
Phone (803) 655-5475

ZX81 APPLE PC MICRO USERS

GGI Has Great Games.
On Cassettes Or Diskettes
(Please Specify Type)

- STAR TREKKER - Based on the TV series $30
- CAVE-IN - An Adventure Game (Vol. I) Possible $1000 Prize $35

Send Check or Money Order (Made Out To Great Games Ink)
GGI
P.O. Box 848
Boca Raton, Fl 33431
(30-60 Day Delivery)

IBM PC
VT100 - VT52 TERMINAL EMULATOR

Saturn Consulting Group
147 W. 26th St., NY,NY 10001
(212)675-7753
(212)255-5996

HDS • HDS • HDS • HDS • HDS • HDS

Quality Software . . .
For your **IBM System/34-38**
From HARRIS DATA SERVICE, INC.
FINANCIAL • DISTRIBUTION • MANUFACTURING
• SPECIALTY BUSINESS MARKETS •

Quality Software Providing:

- Ease of Use
- Comprehensive Data Base Program Design
- Complete Documentation
- Complete, Internally Documented RPGII, RPGIII Program Source Code
- Automatic Release Updates
- Hotline Support Service
- Local Support Available Through Our Distribution Network

Contact Us Today For More Information
On Our *Quality Software* and
Facility Management/Systems Consultation Services
HARRIS DATA SERVICE, INC.
at:
11629 W. Dearbourn Avenue • Milwaukee, WI 53226
(414) 475-1760

HDS • HDS • HDS • HDS • HDS • HDS

SPECIAL OFFER TO CLASSIFIED ADVERTISERS IN COMPUTERWORLD/MEXICO

The Hottest New Newspaper in the Hottest New Computer Market!

Looking for a new market for equipment, services, software or used computers?

Thirty thousand readers of this Mexican newspaper are looking for you.

Come together at $1.90 per agate line on a 5 column page like this one (minium 30 lines/one column).

Write or call: Alicia Lavastida.
***Computerworld/México* Oaxaca 21-2 México 7, D.F.**
Tels.: (905) 549-3139 514-3219. We'll translate your ad for $5.00/page--and set type free.

HACP
THE MISSING LINK

Interconnects VAX and PDP-11 with Mainframes, Networks and Workstations

A versatile and low cost solution for many application needs: distributed processing, multiple sites, automatic dial, remote batch and more.

Call Today for Details

Victorex
P.O. Box 20000, Eugene, Oregon 97402
(503) 687-2000 TELEX 324-416 INTR

SERIES 1 FLEX REPORTWRITER

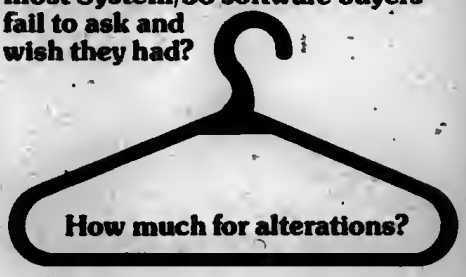
easierwrite-ed

POWERFUL Development Aid
ENHANCES Any Application
EASY To Use & **INEXPENSIVE**

i-concepts, inc.
2500 Royal Lane
Dallas, Texas 75229
(214) 243-0700

software for sale | software for sale | software for sale | software for sale | software for sale

What's the one question most System/38 software buyers fail to ask and wish they had?



How much for alterations?

IBM System/38 software selling often generates a lot more heat than light. But basically, there are two types of programs available: off-the-rack packages that only fit certain companies without expensive alterations, or PCR's custom growth programs that build in a wide variety of options. Initial pricing is about the same for each.

PCR programs are flexible because our experience indicates that no two companies are ever identical. And that every company changes over time.

Yours may be an exception. If your company has no special needs, if you'll never add a new distribution center, launch a new product line, or acquire another firm, it may not make much difference whose software you buy.

But if that's not the case, then PCR can not only make your life a whole lot easier, but save you thousands of dollars in outside programming costs as well.

Because PCR programs allow you to make most of your own changes with your own people. And that's simply not true of others.

- Order Processing & Billing
- Accounts Receivable
- Inventory Management
- Financial Accounting
- Manufacturing Applications

pcr professional computer resources

PCR is the largest, most experienced IBM System/34, System/38 software specialist in the world!

2021 Midwest Road Oak Brook, IL 60521
1-800-323-3331 • Illinois 312-932-2800
Chicago • New York • San Francisco

UNIX

UNIX Operating Systems on DEC Equipment

- Version Bsd 4.1 Supported on VAX 730 VAX 750 VAX 780 30 Days ARO
- S III Enhancement for V7 and Bsd 4.1 SCCS/PWB

IDS
international data services, inc.
(408) 730-UNIX

KeyPro -

KeyPro lets you generate custom sets of characters for TeleVideo function keys for as many purposes as you wish. Included at no extra charge is a pre-built key file containing the 22 most used WordStar commands.
30% discount off list price of $125 through Oct. 15, 1982.
Call or write for more information. Dealer inquiries welcome.

DATA LAW CO.
6950 S. Tucson Way Ste.B
Englewood, Co 80112
(303)773-6153

SYSTEM/34/38

Para Research offers a different marketing approach for software. We provide the best software packages at lower prices. We do this to obtain volume sales, a larger user base and to encourage user feedback. This approach and the input of our many users have made us what we are today: the world's largest distributor of System/34 software. All packages are completely documented, supported by our hotline staff and our money-back guarantee.

WORD PROCESSING $750

Paratext is the most successful and complete word processing system available for the System/34. There are more than 1,700 Paratext users. Paratext offers full-screen text editor, automatic justification, individual forms design, viewable corrections, heads-down typing, word wraparound, variable data insertion, label printing and math capabilities. Paratext is also available for the System/38 at $1,500

FINANCIAL MODELING $500

Paracalc is a diversified modeling system that easily calculates budgets, cash flow, sales projections, commissions, return on investment, production forecasts, anything you can set up in rows and columns. Change one entry and all amounts are re-calculated accordingly in up to 24 columns and 400 rows. Consolidation from many models to one. Return on investment. Available on the System/38 for $1,000.

ACCOUNTING SYSTEMS $500

General Ledger, Accounts Payable, Payroll, Fixed Assets Accounting and Accounts Receivable. Whatever your needs in financial applications, Para Research has the answer. All modules support multiple companies, all are interactive and all can be interfaced with existing software

MAPICS PURCHASING $1,500

MAPICS Purchasing provides complete tracking status for manufacturers using IBM's MAPICS System. It allows input of multiple vendors per item and interacts with MAPICS Accounts Payable, Inventory Management and Materials Requirements Planning modules. Users can produce reports ranging from Purchase Price Variance to Suggested Order Placement to Cash Requirements. MAPICS Purchasing eliminates key entry and typing of purchase orders. This is a must for every MAPICS user

PARAPLOT GRAPHING $350

Paraplot turns statistical data into easy-to-read bars or points. It creates graphs and charts for almost any business activity. In fact, you can produce graphs over 25 inches high. The system plots on your system/34 character printer and CRTs. No special plotting equipment is required.

DATA SYSTEMS $250 to $600

Documentor, $600, provides complete automated documentation, with up to fifteen individual reports that describe systems and subsystems in each program. Clock, $250, an advance job scheduler, allows your System/34 to be productive 24 hours a day. Rescue, $250, is a procedure re-start program that can also be used to create duplicate programs and procedures.

Easy List, $600, a report program generator, compiles an RPGII report or CRT program from a series of simple English prompts. You no longer need a programmer to create your own meaningful management reports. Time Tracker, $300, allows you to easily and accurately allocate computer costs by department, user, workstation or printer.

PARA RESEARCH

At your request, we will send a complete set of documentation, free of charge. Call or write Software Sales, Dept. CW10, Para Research Inc., Whistlestop Mall, Rockport, MA 01966 (617) 546-3446, Ext. 704

FRIEDMAN & ASSOCIATES, INC

Specializing in IBM System/38

10 Walnut Road
Danbury, MA 01810
(617) 648-7980

Totally on-line order entry
complete manufacturing systems
MRP with on-line net change

- Fixed price software
- Business consulting
- Management consulting
- Top team experience

We make it work!

Payroll Systems

Tired of changing your payroll system every year? Have problems paying your employees on time? Need better control over where your labor effort is going? Use PLYCOM's Payroll Package for soft, more that's easy to use, yet effective. Includes complete support and excellent documentation.

Features:

- Easy to use menus
- Completely interactive
- Excellent audit trail
- Division & department reporting
- Multi-state tax calculations
- PCA includable pay type
- Event driven or exception type
- Extensive on-line error checking
- User defined pay cycle
- Easily handles manual checks
- Effective control on voids or returns
- On line employee inquiry
- Productive labor reporting
- For PDP 11's using RSTS II

Plycom, services, inc
P.O. Box 180
Plymouth, IN 46563
(219) 935-5121

WORD PROCESSING IBM SERIES/1

Office Correspondence
System Documentation

Call or Write
C & H Systems Inc.
11925 Oak Haven Way
Baton Rouge, LA 70810
(504) 766-3933
Demonstration Diskette Available

REAL ESTATE

SOFTWARE WANTED

BUSINESS OPPORTUNITIES

SOFTWARE WANTED IBM 34/RPG II

Real Estate Developer wants State-of-the-Art Acctg/Mis Sys: G/L (Cash/Accrual)-A/P (Multi-Co) Job Cost-Prop Management (Comm & Multi-family) - Proj Feasibility-Fin Modeling-Fixed Assets-N/P Send Info To: R.C. Laird/PO Box 7428/Stockton, CA 95207

CONSULTING OPPORTUNITIES

Learn how to become a successful consultant in your own field. Write for a free prospectus: The Consultant's Library, 815-15th Street, N.W., Dept. CW, Washington DC 20005.

Computerworld CLASSIFIEDS:

Our business is to help you improve yours–

via programmers, analysts, engineers, terminals, printers, software packages, computer time, computer services, office space, advertising for seminars & conferences, business opportunities, etc...AND ...

...exposure to an audience of over half a million readers nationwide...
...every week.

NEED A BOSTON OFFICE TODAY?

Locate in the heart of Major Computer and Electronic Companies!
A Turnkey Situation
5 Prime Office Spaces Left

- Natick/Framingham Line off Rte. 9
- At Mass Pike and accessible to all major highways
- No Capital Needed
- Immediate Occupancy
- Plush and Comfortable
- Complete Secretarial and Receptionist Services Included
- Priced below the competition
- All Inclusive Price–From Copies to Coffee
- Ample Parking
- Test Our Flexibility

CALL:
1-617-879-1717 or 237-4018

COMPUTER SPACE 4,000 SF Quincy, Ma

New Raised Floors, Halon System, 200 AMP Service, and Individual Air Conditioning Systems in 1000 SF of Space. Near MBTA Train Station and Quincy Center.
Available November 1
Contact Lucia Kelly Associates
(617)669-7275

TIME & SERVICES

FAST TURNAROUND ON REPAIR SERVICES

Computer Boards
Memories, Peripherals
Power Supplies

All Manufacturers

Emergency Repair
24 Hrs. 212 741 3800

New York Repair Depot

TIMESHARING AVAILABLE

VAX 11/780-VMS
PDP 11/70-RSTS/E

- FORTRAN, COBOL, BASIC
- DATATRIEVE
- ORACLE ®
- STATISTICAL PACKAGES
- DECNET
- TYMNET ACCESS

CONTACT:
James F. Kelley
INSLAW, Inc.
Washington, D.C.
(202) 628-8600

® trademark of Relational Software, Inc.

DEPOT COMPUTER REPAIRS

MEMORIES
POWER SUPPLIES
DISKS PACKS AND TERMINALS
ANY MANUFACTURER

DEC-DG
ALL BOARDS
1-2 WEEK TURNAROUND

1 800 327-8662

Computer Services
4341-2 370/158-3
VS1-CICS-ROSCOE-DOS
REMOTE JOB ENTRY
CICS DEVELOPMENT
CICS PRODUCTION
CUSTOMIZED SOFTWARE
CONTACT JOE BARRETT
(201) 777-3454
15 MINUTES FROM LINCOLN TUNNEL
ONE PASSAIC STREET
WOOD RIDGE N.J. 07075

TIMESHARING AVAILABLE
VAX 11/780-VMS

- 8 MB; Floating Point Accelerator
- FORTRAN, COBOL, BASIC
- DATATRIEVE, FMS, IMSL
- Telenet Access
- Blocks Of Time Available
- Negotiable Rates

Contact:
Richard Bator
ERCO, Inc.
Cambridge, MA
(617) 661-3111

Worldwide IMS • CICS MVS/OS
$ AMDAHL 470/V8 BIG...IBM
Competitive VM/CMS TSO
Call (312) 977-7500
when you need FAST
POWERFUL REMOTE COMPUTER
PROCESSING
COMSHARE®/CRC
200 North Michigan Avenue, Chicago, IL 60601

LOOKING FOR DEVELOPMENT TIME?
$7 PER HOUR CONNECT TIME
NO KILOCORE TICK CHARGES
NO CPU CHARGES
RSTS II TIME
BASIC PLUS 2 COBOL
BASIC PLUS PASCAL C } WITH CROSS COMPILER SUPPORT
WORD & WORD PROCESSING
DATA TECO EDT } PROGRAM EDITING
BUDGET BYTES™ 212-944-9230
by Omnicomputer™
1430 Broadway, New York, N.Y. 10018

4331 MODEL 1
DOS/VSE Rel. II
24 HOUR INSTALLATION
COMPETITIVE RATES
Five minutes from Manhattan
In Maspeth, Queens
Stand alone or partition
Communications Hookup
Fixed block architecture
Tape, floppy and card input
MAKE OUR HOME YOUR HOME
On site parking
Office space available
212-899-2004 516-487-1981

COMPUTER TIME & TIMESHARING

- We are time brokers
- Plain vanilla timesharing at prices less than 1/2 the price of value added timesharing.
- Also RJE & batch time

Contact John Rudder at
Computer Reserves, Inc.
(201) 666-5700

CLASSIFIED ADVERTISING ORDER FORM

Computerworld's Classifieds work.

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Turnkey Systems and Real Estate.)

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are $97.30 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 2" deep) and costs $194.60 per insertion. Extra space is available in half-inch increments and costs $42.35. Box numbers are $10.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us), WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired: _____ columns wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Signature: _____

Name: _____

Company: _____ Title: _____

Address: _____

_____

Telephone: _____

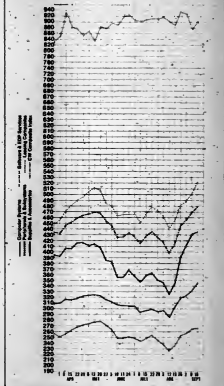
Send this form to:
CLASSIFIED ADVERTISING, COMPUTERWORLD
375 Cochituate Road, Box 880, Framingham, MA 01701

ADVERTISERS' INDEX

Access Technology 14-15
Advanced Electronics Design 27
Aluminum Case Co. 60
Applied Software ID/15
Automated Concepts, Inc. 13
Automated Training Systems 12
Babb Computer Associates 52
Beemak Plastiks 38
B.I. Moyle Associates 40
BMC Software ID/29
Boeing Computer 34
Boole & Babbage 26
Braegen Corp. 18
M. Bryce & Associates 54
Business Week ID/12
CCS, Inc. 60
CGA Software ID/7
Cincom Systems, Inc. 31, 33
ComData 43
Commodore 34-35
Compu-Share ID/6
Computer Associates 5, 29
Computer Corp. of America 61
Computer Distributors 46-47
Computerletics 32
Compuware ID/35
Continental Resources 60
CS Computer 21
CW International 30
CW Supplement 67
Dallas Market Center ID/10
Data General 44-45
Datamation 64
Datasouth ID/30
DataSystems for Industry 42
Dataware 37
DB Systems 14
Delphi Data Systems 39
Digital Equipment Corp./LCG 65
Dorlen Products 16
Eastman Kodak Co. 17
Electronic Data Systems ID/36
EMC ID/38
EPS, Inc. ID/13
Execucom 48
Executec Corp. 63
Fibronics 62
The Functionality Group ID/37
Fusion Products International 15
FTW Associates ID/37
General Research Corp. 60
General Systems Center ID/16
Genesys 23
Henco ID/34
H & W Computer Systems 4, 36
IBM/ISG 50
ICCP 62
IMS 56
Infodata ID/11
Informatics - Corporate 38-39
Information Concepts 6
Information Software & Service 60
Infoworld ID/6, 40
Innovation Data Processing 7
Innovative Electronics 62
Interface Systems 49
Intertec Data Systems Corp. ID/39
ISSCO ID/9
Invitational Computer Conference 66
K/W Controls ID/2
Lear Siegler 10-11
Lee Data Corp. ID/16
Martin Marietta Data Systems 41
MB & Associates 47
MBP Software & Systems Technology ID/28
Memorex - Communications Group 52
Meriyo Corp. 36
Microdata 22
MSA ID/4-ID/5, 98
MTI Systems 18
Multiplications 9
National Computer Communications 37
NCA Corp. ID/32
NCR Corp. 16
Omega Control Systems 40
On-Line Software International ID/14
Oxford Software ID/27
Petroleum Software Systems 66
Predata 47
Protocol Computers 47, 64
SAS Institute 28
Saturn Systems 53
S.D.I. 35
Signal Technology 47
Softmatics Corp. ID/35
Software AG ID/31
Software International 57-59
Software Pursuits 32
Software Results 42
Stratus Computer 19
Sun Information Services 54
Synapse ID/17-ID/24
Syncsort, Inc. 5
SysEd 64
TASC ID/54
Technology Transfer, Inc. ID/5
Televideo Systems 20-21
Texprint 54
Three Rivers Computer ID/8
Toshiba Corp. 62
Tymshare - Computer Support Services 8
Unitronix Corporation 55
VM Software 26, 30
Walker Interactive Products 60
Wolfe Computer Aptitude 22
Xerox - Computer Service Div. ID/26

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Computerworld Stock Trading Index



Computerworld Sales Offices

Roy Ehrenholer **Vice-President Marketing.** Donald E Fagan **Vice-President Sales** Frank Collins **Manager, Display Advertising.** William J Mills **Manager, Classified Advertising.** Diana La Muragia **Manager, International Marketing Services.** COMPUTERWORLD 375 Cochituate Road Box 880 Framingham Mass 01701 Phone (617) 879-0700 Telex 95-1153

BOSTON SALES OFFICE: Chris Lee **Northern Regional Manager** Edward P Marecki, Joseph Fitzhugh **District Managers.** Kathy Doyle Diane Sukey **Account Coordinators.** COMPUTERWORLD 375 Cochituate Road Box 880 Framingham Mass 01701 Phone (617) 879-0700 Telex 95-1153

NEW YORK SALES OFFICE: Michael J Masters **Eastern Regional Manager** Peter Senft Doug Cheney Ray Corbin **District Managers.** Fred LoSapio **Sales Assistant.** COMPUTERWORLD Paramus Plaza I 140 Route 17 North Paramus N J 07652 Phone (201) 967-1350

CHICAGO SALES OFFICE: Art Kossack Newt Barrett **District Managers.** Jan Raska **Account Coordinator.** COMPUTERWORLD 2600 South River Road Suite 304 Des Plaines Ill 60016 Phone (312) 827-4433

LOS ANGELES SALES OFFICE: Jim Richardson **District Manager.** Bob Hubbard Debra Pendergrass **Account Managers.** Beverly Raus **Account Coordinator.** Eileen Dunn **Recruitment Account Manager.** Phone (415) 421-7330 COMPUTERWORLD, 18008 Skypark Circle, Suite 260 Irvine Calif 92714 Phone (714) 556-6480

SAN FRANCISCO SALES OFFICE: William J Healey **Western Regional Director** Barry G Malone Rick Jamison **Account Managers.** Ruth Gordon **Account Coordinator.** Eileen Dunn **Recruitment Account Manager** COMPUTERWORLD 300 Broadway, Suite 20, San Francisco, Calif 94133 Phone (415) 421-7330

JAPAN: Mr Shohei Kurita, COMPUTERWORLD JAPAN 1-19-7 Shintomi Chuo-ku Tokyo 104 Phone (03) 551 3882 Telex 252-4217 Esteban H Yamada, Tokyo Representative Corp Yamaguchi Bldg 2-12 Kanda Jimbo-Cho Chiyoda-ku Tokyo 101/ Phone (03) 230-41176 Telex J26860 **UNITED KINGDOM:** Richard Hease ECC Publications 30-31 Islington Green London N1 Phone (01) 359-7481 Euan C Rose Robert Hall BEERE HOBSON ASSOCIATES 34 Warwick Rd Kenilworth Warwickshire CV8 1HE Phone (0926) 512424 Telex UK-311951 **WEST GERMANY:** Eckhard Utpadel CW PUBLIKATIONEN Friedrichstrasse 31 8000 Munich 40 Phone (089) 34-90-61, Telex W Ger-5-215350-HKFD **AUSTRALIA:** Alan Power COMPUTERWORLD PTY LTD., 37-43 Alexander Street Crows Nest NSW 2065 Phone (02) 439-5133 Telex SECCO AA25468 **BRAZIL:** Eric Hippeau, COMPUTERWORLD do BRAZIL, Servicos e Publicacoes Ltda Rua Alcindo Guanabara 25 10th Floor 20031 Rio de Janeiro, RJ, Phone (021) 240-8225, Telex 11-32017 (WORD BR) **MEXICO:** Richard Small COMPUTERWORLD de MEXICO, Oaxaca 21-2, Colonia Roma, Mexico City 7 D F Phone (905) 514-4218 (905) 514-6309 **FRANCE:** Patrick Morel Le Monde Informatique 42 Avenue Montaigne 75008 Paris **SPAIN:** Neil Kelley COMPUTERWORLD Espana Barquillo 38 Madrid-4 **DENMARK:** Helle Lind Christensen, Computerworld/Denmark, Gammel Strand 50 1202 Copenhagen K Phone 01-1234 11

CW COMMUNICATIONS/INC.

Board Chairman/Publisher
Patrick J McGovern
President
W Walter Boyd
Senior Vice-President
Lee Vidmer

Group VP-Communication Services, Jack Edmonston **Group VP-Circulation,** Margaret Phelan **VP-Marketing,** Roy Ehrenholer **VP-Sales,** Donald E Fagan **VP-Finance,** William P Murphy **VP-Editorial,** John Whitmarsh **VP-Special Publications,** Robert Ziegel

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701 Phone: (617) 879-0700, Telex: 95-1153,

SALES — **Vice-President,** Donald E Fagan **Display Advertising Manager,** Frank Collins **Display Advertising,** Tracey Eastman, Anne Hadley, Pam Valentinas, Julie Sullivan **Classified Advertising Manager,** William J Mills

COMMUNICATION SERVICES — **Group Vice-President,** Jack Edmonston **Director Research,** Kathryn Dinneen **Sales Promotion Manager,** Noreen Kimball

CIRCULATION — **Group Vice-President,** Margaret Phelan **Circulation Manager,** Barbara Jeannetti **Service Rep,** Peggy Kelly **Assistant,** Carmela Priante

PRODUCTION — **Production Director,** Peter Holm **Production Coordinator,** Marlene Stibal **Supervisor,** Henry Fling **Systems Manager,** Tom Pfau **Typesetting Manager,** Carol Polack **Art Director,** Tom Monahan

Computerworld Stock Trading Summary

All statistics compiled computed and formatted by TRADE QUOTES INC Cambridge Mass 02139

CLOSING PRICES WEDNESDAY, SEPTEMBER 15, 1982

EXCH		1981-82 RANGE (1)	CLOSE SEP 15 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
B	AMDAHL CORP	18- 48	27 3/4	+3 7/8	+16.2
N	BURROUGHS CORP	28- 72	37 3/4	+ 5/8	+1.5
O	COMPUTER AUTOMATION	8- 28	10 3/8	-1 1/4	-10.7
B	CONTROL DATA CORP	18- 42	31 8/8	+1 3/8	+4.5
B	CRAY RESEARCH INC	20- 48	24 5/8	-2 7/8	-10.4
N	DATA GENERAL CORP	31- 87	27 3/4	- 5/8	-2.3
B	DATAPOINT CORP	15- 68	18	-1 1/8	-8.5
N	DIGITAL EQUIPMENT	82-113	98 3/4	+ 1/2	+0.5
A	ECCO INC	6- 18	8 1/8	+ 1/4	+3.8
N	ELECTRONIC ASSOC.	5- 13	10 1/8	+ 3/4	+8.0
N	FLOATING POINT SYST	13- 30	24 3/4	-1	-3.8
N	FOXBORO	22- 62	32	+3 1/2	+12.2
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 18	3 3/4	- 1/4	-6.2
N	HARRIS CORP	21- 50	31 1/2	+ 3/8	+1.2
B	HEWLETT-PACKARD CO	33- 84	54 3/8	+1 6/8	+3.4
N	HONEYWELL INC	60-115	83 7/8	- 6/8	-0.7
N	IBM	48- 73	73 3/8	+ 7/8	+1.2
O	IPL SYSTEMS INC	5- 13	6	+ 1/4	+4.6
O	MAGNUSON COMP SYSTS	2- 32	1 7/8	- 1/8	-6.2
N	MANAGEMENT ASSIST	7- 25	10 3/8	- 1/4	-2.3
O	MINI-COMPUTER SYST	0- 4	3/8	0	0.0
N	MODULAR COMPUTER SYS	7- 32	8 1/4	+ 5/8	+7.7
N	MOHAWK DATA SCI	10- 32	15 5/8	+ 5/8	+4.1
N	NCR	38- 76	67 3/8	+2 1/8	+3.2
N	PERKIN-ELMER	17- 36	22 5/8	-1 5/8	-6.7
B	PRIME COMPUTER INC	18- 43	27 3/8	+ 1/4	+0.8
B	SPERRY CORP	21- 55	24 3/8	-3 3/8	-8.8
O	TANDEM COMPUTERS INC	13- 35	24	0	0.0
B	TEXAS INSTRUMENTS	71-151	100 3/4	+1 5/8	+1.6
A	WANG LABS "B"	24- 38	38 5/8	+2 1/8	+5.8
A	WANG LABS "C"	31- 40	38 3/4	+1 7/8	+4.8
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	18- 28	28 1/2	0	0.0
B	COMDISCO INC	18- 37	31 7/8	+2 1/8	+10.7
B	COMMERCE GROUP CORP	1- 1	1/2	0	0.0
O	COMPUTER INVSTRS GRP	1- 2	1/8	0	0.0
O	CONTINENTAL INFO SYS	4- 10	10	+1 1/2	+17.6
B	DPF INC	8- 15	10 1/4	- 1/2	-4.6
O	ITEL	1- 8	5/8	0	0.0
O	LEASPAC CORP	1- 3	1/8	0	0.0
N	U.S. LEASING	18- 30	28	+ 7/8	+3.2

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

EXCH		1981-82 RANGE (1)	CLOSE SEP 15 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 8	1 3/4	0	0.0
O	ADVANCED SYSTEMS INC	8- 15	11 1/2	+ 1/8	+2.3
O	AGS COMPUTERS INC	3- 10	8 3/4	+1 1/4	+14.7
O	ANACOMP INC	10- 18	8 5/8	-1 3/8	-12.5
O	ANALYSTS INTL CORP	3- 14	7 3/4	+ 1/4	+3.3
A	APPLIED DATA RES.	12- 28	28 1/4	+2 1/4	+8.8
O	ASK COMPUTER SYSTEMS	11- 18	18 1/8	+1 3/8	+8.3
B	ARTRADYNE COMP INC	1- 8	1 1/4	0	0.0
A	AUTOMATIC DATA PROC	21- 32	28 1/4	- 7/8	-3.3
O	CGA COMPUTER ASSOC	4- 25	8	+ 1/4	+4.3
O	COMPUTER ASSOC INT'L	12- 24	24 1/4	+3 1/4	+15.4
O	COMPUTER HORIZONS	1- 3	3 1/4	0	0.0
O	COMPUTER NETWORK	4- 8	8 7/8	+ 3/8	+5.7
B	COMPUTER SCIENCES	11- 30	15 1/2	+ 5/8	+4.2
O	COMPUTER TASK GROUP	8- 23	8 1/4	- 1/4	-3.5
O	COMPUTER USAGE	2- 10	2 5/8	0	0.0
O	COMPUTONE SYSTEMS	13- 21	20 3/8	+1 1/8	+5.8
O	COMSERV CORP	8- 18	14 3/4	- 1/4	-1.8
O	COMSHARE	8- 21	8 7/8	- 1/8	-2.0
N	CULLINANE DATABASE	18- 38	38 7/8	+3 6/8	+10.2
O	CYCARE SYSTEMS INC	8- 14	10 3/4	+ 3/4	+7.5
O	DATA DIMENSIONS INC	1- 3	1/4	0	0.0
O	DATATAB	1- 4	5/8	0	0.0
O	DYATRON CORP	2- 11	3 1/8	0	0.0
N	ELECTRONIC DATA SYST	15- 34	34	+2 1/4	+7.0
O	INFORMATICS INC	10- 23	15 7/8	+2 7/8	+22.1
O	INSYTE CORP	1- 3	1 7/8	- 1/8	-6.2
O	IPM COMPUTER MARKET	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 8	4	0	0.0
A	LOGICON	12- 38	18	+1 3/8	+8.2
O	MGMT SCI AMER INC	17- 27	26 1/2	+2	+8.1
O	MATHEMATICA INC	8- 17	18 1/4	+ 1/2	+3.2
O	MATHEMATICAL APP GRP	12- 28	12 1/2	0	0.0
B	NATIONAL DATA CORP	13- 28	18 1/4	+1 1/4	+6.8
O	PANSOPHIC SYSTEMS	8- 18	13	+ 1/2	+4.4
N	PLANNING RESEARCH	5- 13	8 1/2	+ 3/4	+9.8
O	PROGRAMMING & SYS	1- 2	1 1/4	-	-4.6
O	REYNOLDS & REYNOLDS	18- 26	24 1/2	+2	+8.8
O	SEI CORP	17- 28	26 1/2	+2	+8.1
O	SHARED MEDICAL SYST	26- 38	38 3/8	+3 1/4	+8.3
O	SCIENTIFIC COMPUTERS	6- 18	8	0	0.0
O	SOFTWARE AG	8- 23	7 3/4	+1	+14.8
N	TYMSHARE INC	13- 38	20 1/8	+ 3/8	+1.8
A	URS CORP	10- 18	11 3/8	+ 1/8	+1.1
N	WYLY CORP	7- 20	10 7/8	+ 3/4	+7.4
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	1- 18	3/4	- 1/8	-13.3
B	ANDERSON JACOBSON	8- 28	11	+ 1/4	+2.3
O	AUTO-TROL TECHNOLOGY	8- 62	12 1/4	- 1/2	-3.8
O	BANCTEC INC	7- 35	11 1/2	0	0.0
A	BEEHIVE INT'L	4- 18	4 7/8	- 5/8	-11.3
B	BOLT.BERANEK & NEW	9- 29	17 1/8	+ 1/2	+3.0
O	CAMBEX CORP	2- 8	2 3/8	+ 1/8	+6.8
B	CENTRONICS DATA COMP	7- 40	8 1/4	- 1/2	-5.7
A	CETEC CORP	4- 8	4 1/2	0	0.0
O	COGNITRONICS	2- 11	4 3/8	- 3/8	-7.8
O	COMPUTER COMMUN.	1- 2	5/8	0	0.0

EXCH		1981-82 RANGE (1)	CLOSE SEP 15 1982	WEEK NET CHNGE	WEEK PCT CHNGE
A	COMPUTER CONSOLES	16- 28	24 3/8	+ 5/8	+2.8
O	COMPUTER DEVICES INC	4- 13	11 3/4	+1 7/8	+18.8
O	COMPUTER TRANSCEIVER	3- 8	4 1/4	+ 1/8	+3.0
N	COMPUTERVISION CORP	20- 48	23 5/8	- 3/8	-1.4
B	CONRAC CORP	17- 28	26 1/4	0	0.0
A	DATA ACCESS SYSTEMS	2- 15	1 3/8	0	0.0
B	DATAPRODUCTS CORP	18- 44	28 1/2	+1 1/2	+6.5
O	DATARAM CORP	4- 13	8 1/4	+ 5/8	+11.1
O	DATUM INC	2- 8	1 7/8	- 1/8	-6.2
O	DAVID JAMISON CARLYL	3- 7	3 3/4	0	0.0
O	DECISION DATA COMPUT	3- 8	8 3/8	- 1/4	-4.4
O	DELTA DATA SYSTEMS	1- 4	1 1/8	+ 1/8	+12.5
N	ELECTRONIC M & M	3- 5	4 1/4	0	0.0
O	EVANS & SUTHERLAND	18- 40	27 1/4	- 1/4	-0.8
N	GEN'L DATA COMM IND	7- 18	10 5/8	+1 7/8	+21.4
O	GENERAL TERMINAL CP	0- 4	1/4	-	-30.1
O	GREAT SOUTHWEST IND	1- 12	8	- 1/4	-7.8
A	HAZELTINE CORP	18- 28	28 3/8	- 1/8	-0.4
O	INFORMATION INTL INC	6- 17	18	+1 1/2	+10.2
O	INTEL CORP	31- 51	34 3/4	-2 1/4	-6.8
O	IPL SYSTEMS INC	5- 15	5	+ 1/4	+4.3
A	LUNDY ELECTRONICS	7- 18	14 7/8	+ 3/4	+7.4
A	MSI DATA CORP	11- 27	18 1/8	+ 3/4	+4.7
O	NETWORK SYSTEMS CORP	14- 26	25	- 7/8	3.3
O	OMEX	5- 8	3	0	0.0
N	PARADYNE CORP	28- 95	36 1/2	+1 1/2	+4.3
A	PENRIL CORP	7- 17	10	+ 3/4	+8.1
O	QANTEX CORP	8- 23	14 3/4	-1	-6.3
N	RECOGNITION EQUIP	4- 21	8 1/4	- 1/4	-3.8
O	SCAN DATA	1- 5	1 1/4	0	0.0
N	STORAGE TECHNOLOGY	18- 40	15 5/8	-2 3/4	-15.2
O	SYKES DATATRONICS	7- 34	7 1/2	- 1/2	-6.2
B	T BAR INC	7- 18	8 1/4	+ 7/8	+11.8
A	TEC INC	4- 11	8 3/4	- 1/4	-2.7
N	TEKTRONIX INC	38- 70	42 3/4	+1	+2.3
N	TELEX	3- 11	10 3/4	- 1/2	-4.6
O	TESDATA SYSTEMS CP	3- 17	3 5/8	0	0.0
A	TIMEPLEX INC	7- 18	11 1/2	- 1/4	-2.1
O	VISUAL TECHNOLOGY	8- 18	12 1/2	+ 1/4	+2.0
O	WILTEK INC	1- 3	1 1/8	+ 1/8	+12.5
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 17	14 3/8	+ 7/8	+6.4
O	BALTIMORE BUS FORMS	1- 2	1	+ 1/4	+33.3
B	BARRY WRIGHT	14- 34	17 7/8	+1 1/4	+7.8
O	CYBERMATICS INC	1- 2	1	0	0.0
A	DUPLEX PRODUCTS INC	12- 17	18 1/8	+ 1/8	+0.7
B	ENNIS BUS. FORMS	18- 28	25 1/4	+ 1/8	+0.4
N	3M COMPANY	48- 69	64 5/8	+2 1/8	+3.8
O	MOORE CORP LTD	26- 38	33 1/8	+ 3/8	+1.1
B	NASHUA CORP	8- 33	10 5/8	- 1/2	-4.4
O	STANDARD REGISTER	30- 34	33	+2 3/4	+8.8
B	TAB PRODUCTS CO	12- 30	15 1/2	- 1/2	-3.1
B	WALLACE BUS FORMS	22- 37	37 1/4	+ 5/8	+1.8

Read how MSA has already solved your 6 toughest software problems...and relax

At MSA, we specialize in ready-to-install applications systems designed to solve real-world problems—now and into the future.

We offer a complete line of financial, cash management, human resource, and manufacturing applications. And the *total software support* to keep those systems up-to-date.

Here are six important areas where the right software—and The Software Company—can help.

1. Meeting the demand for management information

For many DP shops, backlogged requests for management reports can cause delays and decrease productivity.

MSA applications provide user-friendly reporting features that can often solve this problem.

With MSA systems, accountants and financial managers can produce reports without tying up data processing personnel.

The Custom Reporting feature of the MSA General Ledger System gives accounting people complete control of financial reporting functions. With this feature, they're able to design, build, and produce their own reports. Quickly, and without programmer assistance.

Online capabilities such as EASY-SCREEN™ and EASY-AUDIT™ let accountants design their own screens. Other MSA products give end-users direct access to powerful forecasting and modeling capabilities.

MSA applications help free your data processing staff from routine reporting functions. And increase your overall productivity.

2. The search for integrated systems

MSA is the only software supplier that offers a complete line of integrated business applications.

System interfaces are provided for all MSA applications. These pathways automatically channel information between systems.

By combining MSA systems, you dramatically reduce manual entry operations. And redundant data storage is eliminated.

Most importantly, your integrated MSA applications function interactively to support high-level decision-making.

3. Keeping software up-to-date

Software maintenance costs can amount to more than fifty percent of your total data processing budget.

But with your MSA application package, you get a full year of support services *at no charge* (After that, you can take advantage of our surprisingly affordable support options).

Our customer support organization is the largest in the industry.

We keep track of government regulations, accounting and personnel procedures, and new data processing techniques.

And when new developments affect your system, we provide update bulletins promptly.

We also respond to customer needs and suggestions with timely enhancements and new releases for your system.

At MSA, we keep you *and* your systems up-to-date.

4. Training your people

The MSA Customer Education Program is the most thorough in the industry.

In 1982, for example, we are conducting more than 90,000 student-hours of training.

A broad selection of courses are available, ranging from advanced training for data processing personnel to basic system orientation for end-users.

Workbooks and audio cassettes are also available for on-site training.

5. Reducing implementation time

MSA Implementation Teams have installed more than 7400 software systems worldwide. And we put that experience to work for you beginning with the very first meeting.

We help you work out an implementation schedule that tells you what will happen, when it will happen, and who will be responsible.

Your system is installed by specialists who are experienced with the type of computer hardware your company uses. And they work with you until the system is installed, tested, and operating smoothly.

We even help you handle important details like new business forms, including new check stock, invoices, and so on.

6. What about microcomputers?

For many office productivity and business applications, microcomputers are a practical adjunct to mainframe computing.

Through our Peachtree Software™ Division, MSA can help you co-ordinate your organization's microcomputer software requirements.

You can choose from a full line of comprehensive, yet easy-to-use business applications.

Peachtree's office productivity software products offer an impressive array of functions that include: electronic mail, spreadsheet analysis, word processing, and even a system that checks your spelling.

MSA systems let accountants generate their own financial reports.

Talk to The Software Company

We'd like to tell you more about how our systems can give you ready-to-install solutions.

For more information on MSA systems, please contact Robert Carpenter at (404) 239-2000. Or clip this coupon.

Management Science America, Inc.
3445 Peachtree Road, N.E.
Atlanta, Georgia 30326

Please send me free, detailed information on MSA, The Software Company. I'm particularly interested in:

Mainframe Applications Software: ☐ Financial Systems, ☐ Cash Management Systems, ☐ Human Resource Systems, ☐ Manufacturing Control Systems (MRP II)

Microcomputer Software. ☐ Office Productivity Systems, ☐ Business Application Systems

Computer Type/Model _____

Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Business Phone ( ) _____

CW9a2 (9/20/82)

MSA
The Software Company

Learn more about MSA's Solutions. Visit Booth 563 — SOFTWARE EXPO — 9/21-23, Chicago.